The Application of Social Marketing to Promote Water Efficiency in the Tourism Accommodation Industry

Submitted by David Scott Borden, to the University of Exeter as a thesis for the degree of Doctor of Philosophy in Management Studies in October, 2016.

I certify that all the material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

Signature……

ABSTRACT

This research aimed to critically appraise the nature and application of social marketing to promote water efficiency within tourism accommodation. Social marketing is the use of standard marketing techniques to change behaviour for a social goal. Efforts to promote water efficiency in this context are needed as it has been acknowledged that the tourism industry generally increases per capita water consumption per individual. To alleviate this issue, research engaged a diversity of stakeholders, unique to similar past efforts, through four stages of research.

Stages One and Two engaged managers of tourism accommodation in focus groups and interviews. Managers reported a high interest in changing guest behaviour but emphasized the guest experience was paramount. They identified that most initiatives aiming to promote water efficiency in the existing literature were not viable within their operations and instead they offered new ideas for engaging both guests and fellow managers. In Stage Three, an online questionnaire was conducted with 408 individuals. Results showed significant changes in most water behaviours, though not all, between home and away, indicating promoting efficiency is needed in both sites of practice. Through cluster analysis, three types of water users within the tourism accommodation were identified. Each segment displayed distinct water use patterns and willingness to participate in initiatives. The final stage engaged a panel of experts in a Delphi consultation aiming to discover consensus on evaluating and prioritizing possible initiatives emerging from previous stages. This is the first application of a Delphi consultation, for this purpose, within the field of social marketing.

In addition to recommending the pursuit of certain initiatives to practitioners, the research also yielded several theoretical contributions. Primarily, there is a strong need to standardize the process and unit of analysis for measuring water consumption within tourism accommodation. Secondly, the size, type and clientele base of the business are important factors in considering water efficiency initiatives and therefore social marketing campaigns would be best designed specific to the individual needs of a particular business and not generalized across the industry. Additionally, campaigns to promote water efficiency in tourism accommodation should apply the established theories of modelling, norms creation and social capital. In general, less attention on individual actions and instead larger upstream issues affecting targeted behaviours would enable greater water savings. Finally, the Delphi consultation is recommended as an effective tool for prioritizing and evaluating social marketing initiatives.

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Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

ABC	Attitude, Behaviour and Context/Choice
B&B	Bed and Breakfast
CoAST	Cornwall Sustainability Tourism Project
DEFRA	Department of the Environment, Fisheries and Rural Affairs
FTE	Full Time Equivalent
GTBS	Green Tourism Business Scheme
N/A	Not Applicable
NEP	New Environmental Paradigm
SD	Standard Deviation
SMTEs	Small and Medium Tourism Enterprises
SPSS	Statistical Package for Social Science
SWW	South West Water
TPB	Theory of Planned Behaviour
UK	United Kingdom
UKWIR	United Kingdom Water Industry Research
UNWTO	United Nations World Tourism Organization

Chapter One- Introduction

1.1 Background

While the term sustainability has many varying definitions, here it is defined as the space where economic, social and environmental consideration come together to create balance for the survival of life on Earth (Elkington, 1998). Simply put by Ehrenfeld (2008), sustainability is 'the possibility that humans and other life will flourish on the Earth forever' (p.49). This goal is currently not possible with the crossing of three established planetary boundaries- carbon levels, rate of biological diversity loss, and change to global nitrogen cycle (Rockstrom, *et al.*, 2009). Planetary boundaries are estimates of the critical levels of a given variable that dictate the ability for humanity to operate safely on Earth. The transgression of one or more of these boundaries may be enough to make life inhospitable for humanity and many other species (Rockstrom, *et al.*, 2009). Many authors have identified that environmental problems such as these are commonly rooted in 'adverse' human behaviour and efforts to change such behaviours have been studied across multiple disciplines and throughout the world (e.g. Gardner and Stern, 2002; DuNann, Winter and Rogers, 2004; Steg and Vlek, 2009).

One subject attracting attention for pro-environmental behaviour change is tourism. Like other industries, tourism has the responsibility to operate sustainably (WTO 2005; Hamele and Eckardt, 2006) but continues to contribute to climate change and the degradation of many vital resources (Gössling, 2009; Hall, 2011; Peeters and Laundré, 2011; Scott, Gössling and Hall 2012; Hall,

2013). As a result, it is questionable if the industry will be able to continue to grow, due in large part to resource degradation from the recent rapid development (Hoffman, 2011; Hall, 2013). Growth is projected to continue with the United Nations World Tourism Organization (2010) estimating international tourist arrivals will increase by an average of 3.3% per year from 2010-2030, an average increase of 43 million arrivals per year. One vital resource needed for the growth of the tourism industry is potable water. Gössling, *et al*. (2012) investigated the impacts of tourism on water usage in 55 countries, finding domestic and international tourists accounted for between 40% (Mauritius) and 1% (Canada, Ukraine and Romania) of domestic usage depending on the location. In 22 of these countries tourism accounted for greater than 5% of domestic use, which was higher than most other industries (outside of agriculture). This impact has not gone unnoticed as organizations such as the United Nations World Tourism Organization (UNWTO, 2013), Organization of Economic Cooperation and Development (OECD, 2012) and the United Nations Environment Programme (UNEP, 2011) have identified water stress as a growing and vital issue and offered potential solutions to the industry.

This research sought to extend this growing interest in promoting (potable) water efficiency within the tourism industry. Conducted in collaboration with the primary water company of the South West of England, South West Water, the research was concerned with sustainable business and guest practices within this inherently consumptive sector. South West Water has an interest in prompting water efficiency to stabilize demand and comply with governmental regulations (South West Water, 2014). Tourism is a seasonal industry that creates high levels of fluctuating water demand due to many factors (e.g. national holidays, weather, school breaks, behaviour, etc.).

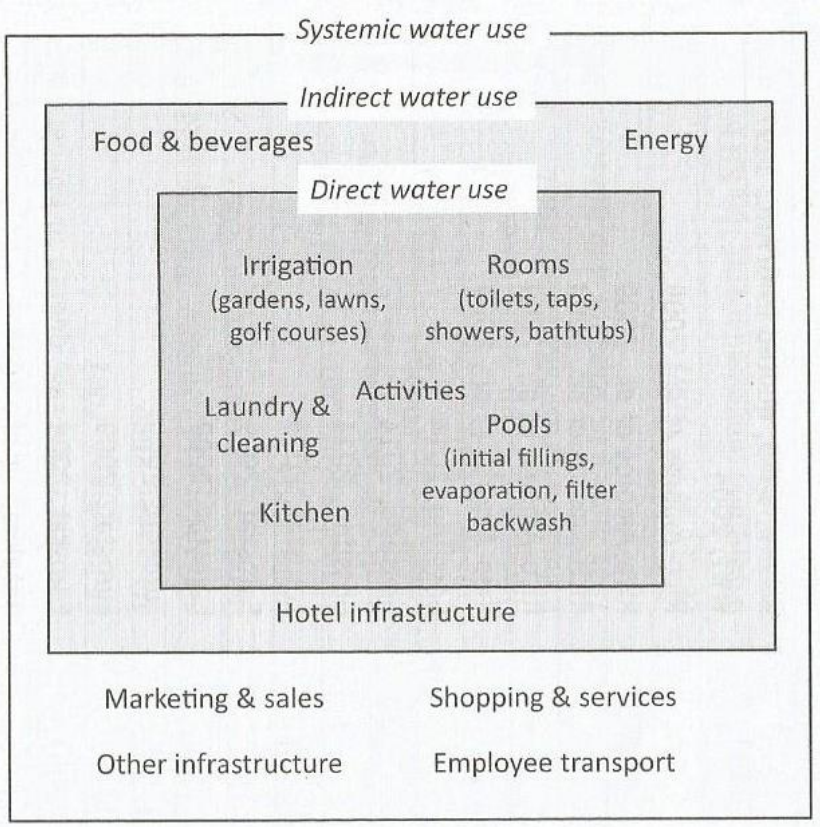
Understanding and controlling, where possible, demand allows the company to more clearly forecast need and ensure supply is sufficient. Additionally, the governmental water regulatory organization, Ofwat, sets regulatory standards for per capita consumption rates which South West Water must comply. To work towards these two goals, South West Water has contributed to this research through sharing information, resources and staff expertise.

1.2 Why Water and Tourism?

Water use within the tourism industry has other impacts on people and the environment not evident in consumption data. Through review of a series of studies, Gössling, *et al.* (2012) and Gössling, Hall and Scott (2015) identify the tourism industry generally increases per capita water consumption per individual; shifts water consumption between continents and regions; concentrates water use during certain times of the year; can cause injustices where visitors have greater access and amount of water then host peoples; and can negatively impact water quality through sewage discharge.

Figure 1.1 represents water consumption embodied by the tourism industry. First, the industry consumes water indirectly and systematically. Indirect and systematic use are the water embedded in construction materials, food and other products needed for the operations of the industry but not directly consumed or used for recreation. Alternatively, direct water includes showers, human consumption, laundry, taps for washing up, and so forth.

Figure 1.1: Water Consumption in the Tourism Industry.



Source: Gössling, *et al.* (2015, p.47).

Several studies have found indirect and systemic water use is substantially higher than direct water use in the tourism industry (e.g. Gössling, *et al.*, 2012; Hadjikakou, *et al.*, 2013; Cazcarro, *et al.*, 2014). In a real world application, this was reinforced by an internal audit by the world's largest hotel group, ACCOR, reporting their food supply chain accounted for the majority of their water usage (ACCOR Academies and Sustainable Development, 2011). While indirect water use cannot and should not be ignored, this thesis focused solely on direct water consumption. This was done because stakeholders, such as South West Water, are most interested in direct water usage as it features in their business operations, and because it is more easily addressed by these same stakeholders. Most direct water use in the tourism industry is consumed within tourism accommodation (Gössling, *et al.*, 2015).

1.3 Tourism Accommodation

With regard to direct water usage, Gössling, *et al.* (2012) report the average tourist uses between 84-2000 litres per guest per day or up to 3423 litres per bedroom per day. This high variation represents discrepancies in findings. For example, there seems to be consensus that tourists typically consume more water than local people in developing countries, where in the extreme case of Zanzibar, tourist consumed up to 15 times more (Gössling, 2001). However, little consensus is found on how much the average tourist uses in developed nations. In a study using secondary data sources (AQUASTAT and EarthCheck), Becken (2014) found daily tourist water consumption was only higher then local per capita consumption in less developed countries while similar amounts between local people and tourists were found in more developed countries. However, some studies have found conflicting results such as Crase, O'Keefe and Horwitz (2010) who reported tourists used more water than local people in Australia. Further complicating the understanding of guest use, several studies have found different factors explaining high water consumption.

Some literature suggests that water consumption depends on the size of the establishment (Gössling, 2001; McLennan, Becken and Stinson, 2015) or hotel classification (Hamele and Eckardt, 2006; Bohdanowicz and Martinac, 2007; Charara, *et al.*, 2011). Others identifying the presence of pools (Bohdanowicz and Martinac, 2007; Tortella and Tirado, 2011; McLennan, Becken and Stinson, 2015); golf courses (Tortella and Tirado, 2011; Hadjikakou, Chenoweth and Miller, 2013; Gössling, *et al.*, 2012); and meals served (Deng, 2003; Bohdanowicz and Martinac, 2007). Alternatively, O'Neill,

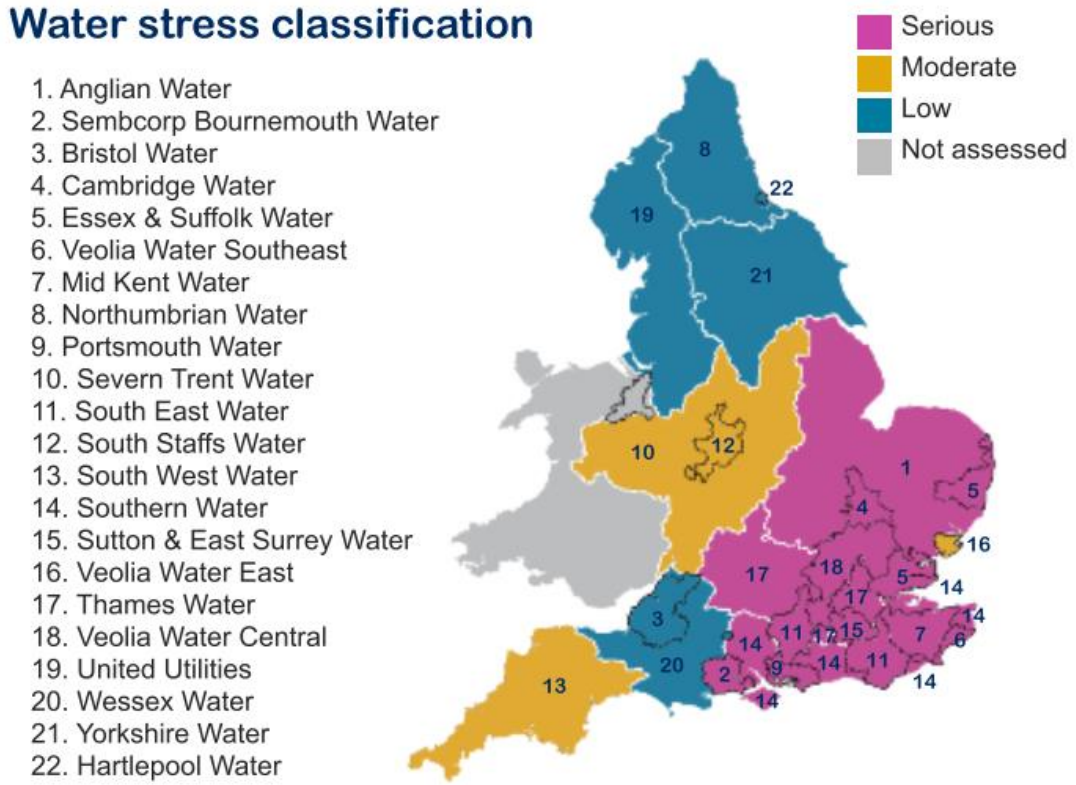
Siegelbaum and THE RICE GROUP (2002) identified kitchens and public areas as points of greatest water use. Still, other studies have acknowledged laundry services (Deng and Brunett, 2002; O'Neill, *et al.*, 2002; Deng, 2003; Antakyali, Krampe and Steinmetz, 2008); climatic zone and seasonality (Gössling, *et al.*, 2012; McLennan, Becken and Stinson, 2015); or, staff living on the premise (Lamei, *et al.,* 2009). The type of tourist may also matter as Gössling, *et al.* (2012) report international tourists use more water than domestic tourists. Additionally, management efforts may also determine usage (Gössling, *et al.*, 2012; McLennan, Becken and Stinson, 2015). While this list is not meant to be exhaustive, the variation in findings are substantial and represent little consensus on the issue.

These variations may be due to high variation in services provided by accommodation or by varying methods for measuring consumption rates (Gössling, *et al.*, 2015). This later point is highlighted by varying studies, measuring usage in different units. While litres per person per day is the most common unit of measurement, four varying units have been used in the literature: l/ person/day (e.g. Hamele and Eckadt, 2006; Chara, *et al.,* 2011); water usage per area, m^3m^2 (Deng and Brunett, 2002); l/guest/room/day (Cobacho, *et al.*, 2005); and, gallons/room (O'Neill, *et al.*, 2002). Additionally, many of these studies have not provided descriptions of their methods to enable others to replicate their work. Clearly standardization within these types of studies and transparency in reporting methods is needed. Such high levels of variation in measurement methods make comparing across different variables (e.g. location, services provided, type of establishment, size of business, etc.) difficult. Standardization would enable researchers and practitioners to better establish areas of need and best practice for conservation.

1.4 Why Water Efficiency in South West England?

According to Gössling, *et al.* (2012), the UK has significant water reserves, using just 6.5% of their total renewable water resources. However, this amount is founded on annual rainfall and not current storage capacity. Said another way, people need water at the right place and time of year to address needs. However, these needs have not always been meet. For example, in 2006, South East England experienced its worst drought in 100 years which affected 15 million people (Ofwat, 2011). Additionally, in 2011, the UK Environment Agency reported large areas of the country were water stressed (Figure 1.2).

Figure 1.2: Water Stress within the UK.



Source: Published in Ofwat (2011, p.7).

Of the 22 water catchment areas in the UK, 12 were classified as 'seriously water stressed.' In this report, level of water stress was assessed by comparing

current and forecast rainfall with current and forecast household water demand per person. Generally, the South East of the country, including London, was classified as water stressed while the North, South West and West were low or moderate in classification. The Southwest most counties of Devon and Cornwall, South West Water's primary distribution area, were considered moderately stressed.

Gössling, *et al.* (2015) warn climate change predictions consistently show more extreme weather such as droughts and even flooding. These extreme weather events and a growing population in England will inevitably mean a need to store and control less predictable amounts of water flow for people and the environment. One solution is to attempt to stabilize water demand through promotion of water efficiency (Waterwise, 2015). Ofwat (2011) explains this need:

> 'It seems obvious that we will need to capture more rainfall in time of surplus, storing it for when we and the environment need it most. In some cases that could be the best solution. But saving water brings wider benefits. Not only can it help to protect the water environment, it can also help customers to reduce their water bills' (p.3).

Furthermore, promoting water efficiency is widely acknowledged as a cheaper solution to storing water (Waterwise, 2015; South West Water, 2014; Gössling, *et al.*, 2015) and it has the added benefit of not reducing open space for recreation and wildlife, which building more water storage may.

Table 1.1: Guest Water use by Accommodation Type in South West England.

Accommodation	LITRES/PERSON/DAY
Touring sites	81.5
Static caravans	85.7
Mixed static/touring	100.7
Guest houses	156.3
Apartments 1*/2* hotels	201.5
3*/4*/5* hotels	322.3

Source: South West Water (2005, n.p.).

According to South West Water (2014), Ofwat has proposed UK residences need a domestic per capita average of 130 litres per day, though in South West England the consumption rate is closer to 140 litres per day. Additionally, South West Water (2005) has reported high usage patterns by tourists in their distribution area, from 81.5-322.3 litres per guest per day, depending on the accommodation type (Table 1.1). These numbers are comparable to findings by Gössling, *et al.*, (2012) that the average UK international tourist consumes 200 litres per day and domestic tourists consume 92 litres per day. Though it is important to note that no methods were reported for the South West Water data and therefore rates using established methods and using more recent consumption data are needed.

From South West Water's figures, it would appear tourists use less water than local people when in touring sites and caravans and more water than local people when in guest houses, apartments and hotels. Adding to evidence that tourism in the region is needing intervention, in South West Water's (2015), *Water Resource Management Plan 2015-2040*, it indicates 'tourism helps to

explain why the hotels and catering industry is one of our largest (customers), accounting for around 18% of non-household consumption' (2015, p.3.26). Further indicating this need is work by Coles, Merchant and Nankervis (2011) whom found UK home usage was reducing at faster rates than tourism accommodation usage. It would therefore appear that promoting water efficiency within the tourism accommodation industry in South West England may aid in alleviating local water stress and instability.

The Environment Agency and Ofwat are not the only stakeholders within South West England working to promote water efficiency. Non-profit organizations, such as Waterwise, promote water efficiency through organizing conferences, conducting research and providing services to other stakeholders. Another regional stakeholder is the UK Water Industry Research group (UKWIR) whom, among other things, research opportunities for water companies to promote more efficient use by their customers (UKWIR, 2014). Universities have also been key stakeholders in providing research and expertise in promoting water efficiency (South West Water, 2014). South West Water has also been a key stakeholder, promoting water efficiency through distributing free products, offers on discounted water efficient devices, home audits, business audits, school audits, tools for self-auditing, educational campaigns, more efficient management in storage and distribution and incorporation and investments in new technologies (South West Water, 2014).

There are also stakeholders promoting water efficiency within the tourism industry. Specifically, Green Tourism Business Scheme (GTBS) is a company that offers a green certification scheme to tourism accommodation that meet a specified criteria. While this certification scheme covers all environmental efforts (e.g. energy, water, waste, purchasing, etc.) promoting water efficiency is

a key goal (GTBS, 2016). Additionally, the CoAST Network is a non-profit organization which promotes sustainable tourism in Cornwall. Among their many efforts, they host conferences, educational campaigns, give away free products and connect other stakeholders through email lists. Specifically, water efficiency has been a key area of their promotion in the past (CoAST, 2016).

1.5 The Role of Social Marketing

One area of growing research being applied to promote pro-environmental behaviour, and to a lesser extent water efficiency, in the tourism industry is social marketing (Truong, Garry and Hall, 2014). Social marketing is 'the adaptation and adoption of commercial marketing activities, institutions and processes as a means to induce behaviour change in a targeted audience on a temporary or permanent basis to achieve a social goal' (Dann, 2010, p. 151). Peattie and Peattie (2009) find social marketing has the potential to reduce human consumption. Furthermore, it has been applied to promote sustainable tourism behaviour (Dinan and Sargeant, 2000; Wooler, 2014; Hall, 2014). However, its application to promoting water efficiency within tourism accommodation has been limited to only a few examples (e.g. Shang, Basil and Wymer, 2010; O'Neill, *et al.*, 2002). As such, there are still several issues unresolved relating to its application for this purpose.

For example, no academic research has focused on social marketing to reduce water use within tourism accommodation with multiple stakeholders, instead focusing on businesses or guests. The applications for this purpose have also focused primarily on only a few behaviours, while other applications need further investigation (e.g. general taps, showers, toilets, etc.).

Additionally, understanding of several specific attitudes and behaviour relating to the topic are unresolved. Such gaps in the literature will be investigated further in the proceeding literature review chapters of this Thesis.

One critical issue remaining to be resolved is the concept of a given behaviour transferring from one site of practice to another, defined by Shaw and Williams (2002) as spill-over. While spill-over in water behaviour from home to holiday has not been specifically investigated, research has presented spill-over in water use behaviour as a subset of an overall understanding of more general tourist environmental behaviour (e.g. electricity use, recycling, transportation, water use, etc.). Miller, Merrilees and Coghlan (2014) found water efficient behaviour is only slightly reduced on holiday from home. Since water behaviour in the home is considered habitual (DEFRA, 2009; UKWIR, 2014) they concluded that spill-over occurs at a high rate due to it being an automated act. In contrast several other studies (Dolnicar and Grün, 2009; Barr, Shaw and Coles, 2011b; Juvan, Ring, Leisch and Dolnicar, 2016) disagree, reporting spill-over does not occur from home to holiday. They contend that different levels of spill-over are observed between varying groups of water users suggesting that not everyone 'packs' their environmental efforts when departing for holiday.

This investigation has value to the social marketing process as the location of a campaign is vital to its success (Andreasen, 2006). If spill-over does occur between home and away, then tourists' behaviour is cemented in the home and efforts to change behaviours would be best targeted in that site of practice. If spill-over does not occur, it may be important to intervene in the holiday experience. Therefore, the issue of spill-over, specific to water behaviour, warrants further investigation and is discussed further in the literature review and discussion sections of this Thesis.

The current research intended to fill those gaps in knowledge identified above. The next two chapters will provide a more in depth review of the literature to further the understanding of these gaps and support the discussion section. This literature review was also used to inform the project aim, objectives and research questions.

1.6 Introducing the Research

The aim, objectives and supporting research questions are presented in Table 1.2. This research aimed to critically appraise the nature and application of social marketing to promote water efficiency within tourism accommodation in South West England.

Each objective was developed through the extensive literature review presented in Chapter Two and Three. Objective One (investigate how tourism accommodation businesses manage water) was vital to understanding how businesses use water in their operations. O'Neill, *et al.* (2002) identify the need to understand the drivers and barriers to water use by this key stakeholder in order to apply social marketing campaigns in the tourism accommodation industry. This objective aimed to establish the foundation for understanding water use within the tourism accommodation and areas for social marketing to penetrate into business operations. This was accomplished through investigation of the viability of existing social marketing initiatives and creation of new initiatives. Through this process, tourism accommodation managers contributed their 'voice' to the creation of efforts, which are examined in Chapter Five.

Table 1.2: Thesis Aims, Objectives and Research Questions.

Aim	Objectives	Research Questions	Corresponding Chapter
Critically appraise the nature and application of social marketing to promote water efficiency within tourism accommodation	**1.** Investigate how tourism accommodation businesses manage water	**1.1** To what extent do accommodation managers value water in the success of their business?	5
		1.2 What are the barriers and drivers for managers to implement water efficient initiatives?	5
		1.3 How are initiatives aimed at changing guest behaviour perceived by accommodation managers?	5
		1.4 Do managers have new ideas or current practices not previously tested in the literature?	5
	2. Examine behaviour among groups of water users	**2.1** What water use behaviours are exhibited in the home?	6
		2.2 What water use behaviours and attitudes are exhibited by guests in tourism accommodation?	6
		2.3 Are there differences between water use behaviours at home and in tourism accommodation?	6
		2.4 How can guests be described based on segmenting them by their water behaviours?	6
	3. Describe potential efforts to change water behaviour in tourism accommodation	**3.1** How do potential initiatives impact the guest experience of water user segments within the tourism accommodation?	6
		3.2 How do potential messages impact the behaviour of water user segments within the tourism accommodation?	6
		3.3 Where are messages best physically positioned to reach guests?	6
		3.4 What potential initiatives exist, discovered through the process of social marketing with both managers and guests, to reduce water use within the tourism accommodation?	7
	4. Assess the effectiveness of potential social marketing initiatives to encourage water reduction in the tourism accommodation industry	**4.1** How is the effectiveness of potential initiatives assessed by experts?	7
		4.2 Is there continuity in accessing potential initiatives between each stage of this research?	7
		4.3 Who is best positioned to implement initiatives?	7
		4.4 What implications do results of this research have for the field of social marketing?	7

Source: Author.

Objective Two (examine behaviour among groups of water users) was vital in understanding the behaviours of guests at home and when in tourism accommodation, informing the key question of spill-over. The debate of spill-over is still unresolved, especially within the context of water use (Miller, Merrilees and Coghlan, 2014). The resolution of this question establishes where social marketing campaigns should target. That is, if spill-over occurred between home and away, then tourists' behaviour was cemented in the home and efforts to change behaviours would be best positioned in that site of practice. If spill-over did not occur, it would therefore be important to intervene in the holiday experience. The objective was also concerned with the social marketing process of segmenting the audience (Andreasen 2002) to better understand how interventions could target each type of water user.

The third objective (describe potential efforts to change water behaviour in tourism accommodation) acknowledged the need to use both manager ideas and guest feedback to understand potential initiatives. Initiatives must be accepted by both stakeholders to ensure they are viable and effective (Gössling, *et al.*, 2015). To achieve this, guests need to be targeted by their unique behaviours and needs. Identifying where in the tourism accommodation initiatives should be placed to best effect behaviour was also important to this process.

The fourth and final objective (assess the effectiveness of potential social marketing initiatives to encourage water reduction in the tourism accommodation industry) relied upon a Delphi consultation, explained in Chapter Four, to evaluate and prioritize potential initiatives. In past social marketing campaigns there has been a lack of theory directing efforts (Luca and Suggs, 2013). Here, continuity between theory, emerging from the literature

review, and results of each stage of the methods were used to appraise research outcomes. As a result of this linear and compounding approach, practical and theoretical contribution from this effort, to the fields of social marketing, tourism and water management, emerged.

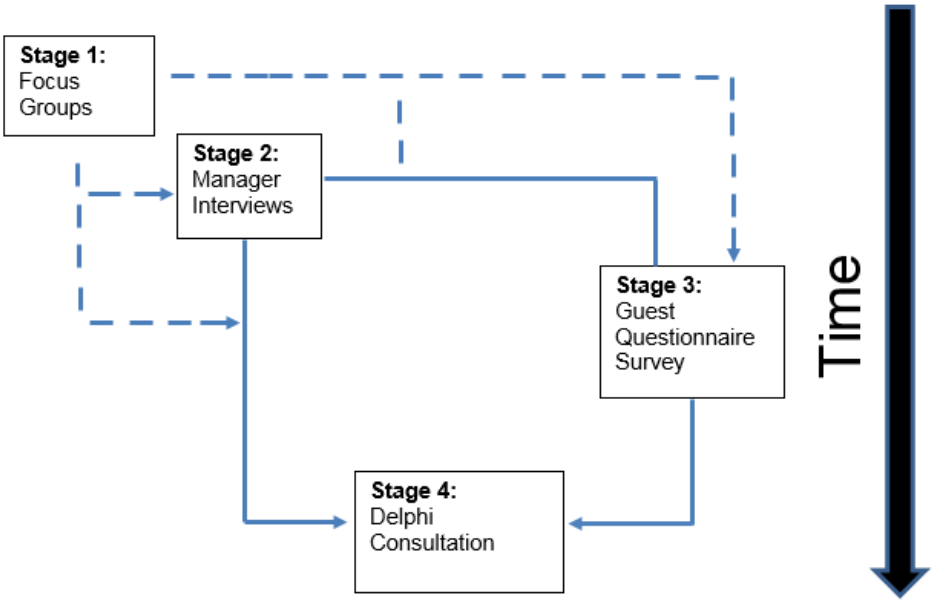
1.6.1 Theoretical and Conceptual Framework

This research incorporated the three broad subjects of water management, social marketing, and tourism. The methods and theories presented herein represent concepts from business management, human psychology, behavioural economics, marketing and water management. Primarily these disciplines were used to understand and inform human behaviour change. In this research, human behaviour was primarily understood through the debates between the sociologist Shove (2010; 2011) and psychologists Whitmarsh, O'Neill and Lorenzoni (2010). These debates, presented in Chapter Two, highlight a distinct divide in the epistemologies and methodologies used to describe, and intervene in, human behaviour.

Unique to past efforts, this work focused solely on water use in the home and on holiday. This enabled a deeper breathe of questioning and understanding of water behaviour in tourism accommodation and investigation of spill-over not previously found in the literature. Also unique to past efforts, this project engaged multiple stakeholders to broaden research outcomes. The results are original contributions of recommended initiatives not previously explored in the literature and theoretical contributions to the fields of tourism, water management and social marketing.

The makeup of the mixed methods in this study were also unique to past efforts. Figure 1.3 represents the flow of information and progression of research, highlighting how each stage informed the next. Of note, Stage One was completed as part of a previous research effort, though used herein as the author of this thesis was one of the principle investigator. The relationship of this data to the current research is explained in greater detail in Chapter Four. To represent that data was collected in this manner, all information flowing from Stage One is shown in dotted lines.

Figure 1.3: Four Stages of the Methods and Flow of Information.



Source: Author.

The novelty represented in this combination of methods was that research began with managers and used these findings to explore how their solutions were perceived by guests. From these collective results informed potential initiatives aiming to promote water efficiency by both managers and guests emerged. Unique to past efforts in social marketing, a Delphi consultation was employed with a panel of experts to evaluate and prioritize research outcomes.

1.6.2 Thesis Structure

To prepare the reader, a short introduction to each chapter is presented below. Subsequent chapters were designed to build upon each previous section, creating continuity. The first two chapters review relevant literature, identifying gaps and building evidence for how and why the methods were assembled. Next, results for each of the four methods sections are presented and then discussed. The thesis ends by summarizing main findings, identifying limitations to the work and making recommendations for future research.

Chapter Two aims to build the foundation for understanding environmental behaviour in the home and on holiday. A review of theory related to understanding human behaviour is presented. This is followed by an examination of the literature on water use in the home and while on holiday. The issues of spill-over and lifestyle groups are analysed within this context. Additionally, studies examining water management practices within the tourism accommodation are also highlighted. Ultimately, this chapter builds a better understanding of the factors influencing general environmental behaviour, and specifically water use, which inform subsequent chapters through providing theoretical underpinnings of motivations and barriers to water efficiency.

The third chapter is a review of the social marketing literature, aiming to clearly define the field of study. The historical definition and processes are investigated to explore how it may direct the current research. Social marketing efforts in water use are highlighted and gaps in the literature are identified. These gaps further demonstrate the unique contributions and originality of the current research. Finally, critiques of social marketing are examined to critically

appraise its use as a tool to promote water efficiency within tourism accommodation.

In Chapter Four, the stages of the methods are described. The first stage consisted of focus groups with tourism managers. Semi-structured interviews to collect additional information from a new sample of managers was then conducted in Stage Two. A description of Stage Three, the guest questionnaire, is then provided. Finally, the Delphi consultation is explained. Special attention is given to describing the sample, survey instrument and data collection process for each stage. The chapter concludes by critically analysing the reliability of the data and considering the ethics of the data collection.

Results from Stage One (focus groups) and Two (semi-structured interviews) with tourism accommodation manager are presented in Chapter Five. These two stages are presented together because many of the themes and results overlapped. Specifically, drivers and barriers to managing water within the business are examined. Additionally, managers evaluated the viability of initiatives aiming to promote water efficiency, previously examined in the literature, within their own operations. Managers also provided new ideas for initiatives aiming to promote water efficient behaviour by guests and fellow managers. Finally, a discussion of how results from these two stages informed the guest questionnaire is presented.

The results of Stage Three (guest questionnaire) are presented in Chapter Six. Comparisons from home and away behaviour, spill-over, are explained. Cluster analysis is then used to identify key segments of the audience to ascertain how, initiatives, previously identified by managers, may affect their experience within the tourism accommodation.

In Chapter Seven, ten potential initiatives emerging from the results of previous stages are described. Results from the Delphi consultation are presented which show how a panel of experts evaluated the effectiveness of each initiative; ranked them in order of priority for implementation; and, measured the factors they used to prioritize them. The results of the Delphi consultation are compared to those in other stages of the methods to identify initiatives receiving high levels of support. Collectively, the literature review, results from the manager focus groups and semi-structured interviews, guest questionnaires and the Delphi consultation are explored with respect to project aims and implications for the fields of social marketing, tourism and water management.

The final chapter summarizes the main findings of this research. Key contributions and the originality of the thesis are highlighted. The research objectives are revisited with respect to overall finings. Finally, limitations of the research and implications for further research are identified.

Chapter Two- Literature Review: Environmental Behaviour

2.1 Introduction

Humanity has the option to work within the confines of the planetary boundaries discussed in Chapter One. This option is similar to a football match where the teams have decided to play within the physical boundaries of the game. Humanity can decide to consume resources within the confines of a safe operating space as outlined by these boundaries (Rockstrom, *et al*., 2009). This decision begins with, and relies upon, pro-environmental actions as most environmental problems are rooted in 'adverse' human behaviour (Gardner and Stern, 2002; DuNann, Winter and Rogers, 2004). Water conservationists have several options for promoting water efficiency such as technology efficiencies, reducing demand by promoting efficient use, increased monitoring to inform decisions and preventing leaks, and using alternative water supplies. All options include some level of behavioural decision. The intention of this chapter is to establish an understanding of how environmental behaviour, and specifically water behaviour, is quantified and qualified to inform this research moving forward.

In particular, this chapter will investigate the academic debates focusing on the theoretical reasons for these behaviours, specifically the differences between societal or individual responsibility. The framework for understanding human behaviour and some associated models of research will also be examined. Importantly, recent research has investigated these issues though

segmenting the population into sustainable life-style groups (Barr, Gilg and Shaw, 2011a). This concept has been used to examine the notion of spill-over. This investigation will establish the foundation for understanding water behaviour in the UK home, guest behaviour whilst on holiday and accommodation manager behaviour to promote water savings.

2.2 Conceptual Understanding of Human Behaviour

Many broad perspectives for behavioural research exist (Hall, 2014). Two conceptual variations can be found in a now popular academic debate between sociologist Shove (2010: 2011) and psychologists Whitmarsh, *et al.* (2010). Shove (2010) asserted that funding and research priorities are embedded in a paradigm of responsibility placed on the individual. She claimed that these models are dominantly embedded in the ABC (Attitude, Behaviour and Choice) model that human behaviour can be added up like an equation. For Shove (2010), research has relied too heavily on the notion that understanding the ABCs will lead to solutions for changing behaviour and research focused on variables that describe individual actions is already embedded in the concept that the individual is the focal point of the cause of environmental (mis)behaviour. Shove (2003; 2010; 2011) instead called for a systemic redefinition of normal practice where the unit of analysis was social convention (elements of technology, commercial, symbolic and cultural relevance). The individual is therefore no longer at the epicentre of change efforts and instead replaced with social conventions.

Whitmarsh, *et al.* (2010) responded by agreeing multidisciplinary work is beneficial to action research. However, they were adamant that individuals

need to feel a level of responsibility for change to occur and a world without personal responsibility would be even more detrimental. They also contended that Shove (2010) had misunderstood the 'C' in the ABCs. They explained that the 'C' is for Context and not 'Choice' and therefore the ABCs embrace her call for a broader social perspective. Ultimately this debate revolved around the three primary issues of: varying epistemologies, who has responsibility for environmental (mis)behaviour and the value of interdisciplinary collaboration.

To further these points, two examples are presented. In the first, Shove (2003) investigated the sociological perspective of water and energy behaviour. She described these behaviours as 'generally inconspicuous and habits' and connected to three domains of life: comfort, cleanliness and convenience (Shove, 2003, p.1). Browne, Medd and Andersen (2013) expand upon this concept, proposing water is also embedded in leisure, health and psychological wellbeing. Shove (2003) continued, also identifying frameworks for approaching water consumption in understanding and changing socially driven behaviours. She found that the exercise was important to redefining 'normal practices' instead of assuming individual behaviour as the central unit of analysis.

This was in contrast to the approach of Whitmarsh, *et al.* (2010) whom would begin with mapping all of the variables that may influence individual behaviour. For example, this approach was used in Whitmarsh and O'Neill's (2010) work on self-identity driving pro-environmental behaviour. First, they quantified individuals' pro-environmental values, perceived control, subjective norms and demographic factors. They then used statistical analysis to determine which variables significantly affected behaviour. Through this

process, they concluded ‘self-identity’ was a significant determinant of pro-environmental behaviour.

On epistemological differences, Shove (2011) was writing from a more constructivist perspective, believing that human behaviour is in great part due to contextual, cultural and temporal variables. The lens of constructivism views human perceptions as the creator of knowledge and our understanding is always a human and social construction (Berger and Luckmann, 1967). According to this view, the world is dependent on human reality and can only be understood using human and social constructions. In contrast, Whitmarsh, *et al.* (2010) were writing from a more positivist approach, believing that an equation can primarily explain human behaviour based on motivations, attitudes and context. According to Newton, Deetz and Reed (2011) a positivist approach assumes that reality is a relatively obvious and knowable phenomena that can be understood through observation and validated by measurement. Spurred by epistemological differences they disagreed in part with who has ultimate responsibility for environmental degradation. Shove (2010) believed the onus primarily falls on aspects of society where Whitmarsh, *et al.* (2010) contended it primarily falls on the individual. Contributing to this debate, Wilson and Chatterton (2011) added the difficulty of matching models and behaviours. Identifying that different behaviours require different methodologies and epistemologies to discover solutions, they highlighted that practitioners and researchers are commonly left wondering which model goes with a given behaviour.

2.3 Lifestyle Groups and Spill-Over Behaviour

The two broad perspectives highlighted above have been augmented by policymakers and academics focusing on the notion of sustainable life-styles (Jackson, 2005; Barr and Gilg, 2006). This term may have varying meanings and applications depending on the academic perspective (Hobson, 2002). According to Darnton and Sharp (2006) sustainable life-styles are characterized by using varying and complex clustering models to group individuals into segments of common pro-environmental behaviour patterns. This approach has aimed to target behaviour change and has been used extensively in the household (e.g. Barr and Gilg, 2006; DEFRA, 2008; 2009), for encouraging public transportation (Anable, 2005) and pro-environmental behaviour on holiday (e.g. Dolnicar and Grün, 2009; Barr, *et al.*, 2011b; Shaw, Barr and Wooler, 2013).

However, the concept of life-styles has been criticized by Hobson (2002) for not sufficiently incorporating the broader social context outlined by Shove (2010; 2011). This criticism is accentuated by work (e.g. Barr, *et al.*, 2011b; Barr, Shaw and Coles, 2011c; Barr, Shaw, Coles and Prilliwitz, 2010) suggesting not all behaviour occurs between varying sites of practice. This idea of behaviour transferring between varying sites of practice has been referred to as spill-over or behavioural flipping (Barr, *et al.*, 2011b). Spill-over in the academic literature has commonly focused on how participation in one pro-environmental behaviour may dictate similar pro-environmental leaning toward other environmental behaviours (Thøgersen, 1999; De Young, 2000; Haq, Whitelegg, Cinderby and Owen, 2008; Thøgersen and Olander, 2003). For

example, does an individual committed to recycling also compost organic waste?

However, other researchers (e.g. Shaw and Williams, 2004; Barr, *et al.*, 2011b; Shaw, *et al.*, 2013) have defined spill-over as differences in behaviour from varying sites of practice (e.g. home and holiday). They have reported that this is a primary area of academic interest for understanding and changing tourist behaviour. In the current research, spill-over will refer to this type of phenomenon and will use the term behavioural flipping, changes from one location to another, synonymously.

To build upon the understanding of epistemology and spill-over, the next section examines factors and models that influence environmental behaviour. These factors and related models are not necessarily linked to just one epistemological approach, nor are they independent of each other. The aim of the next section is to form a foundation for understanding some of the specific detailed models of human behaviour to inform the current work.

2.4 Factors Influencing Environmental Behaviour

As evidenced by debates between Whitmarsh, *et al.* (2010) and Shove (2010), environmental behaviour can involve great complexity in scope and detail. To aid in further defining this issue, work by Steg and Vlek (2009) is presented to map factors influencing environmental behaviour and lines of research in behaviour change (Table 2.1). It is important to recognize that many other studies have created categorical ways to examine human behaviour (e.g. Geller, Winett and Everett, 1982; Vlek, 2000; Gardener and Stern, 2002; Geller, 2002). This variation may be due to a need to tailor strategies to the given

behaviour, the desire to create greater or less categorical resolution, and/or to choose terminology most appropriate for the researchers' audience. Here, the work of Steg and Vleks (2009) was chosen because it is a synthesis of previous efforts and therefore is a more general overview. Their research separated factors influencing pro-environmental behaviour into the three main categories of motivational, contextual and habitual. Each factor and their associated models for measuring behaviour will be discussed further in the following sections.

Table 2.1: Factors influencing Environmental Behaviour and Related Models.

Factors Influencing Environmental Behaviour	**Models for Understanding**
A. Motivational Factors	
Cost/Benefit	Reasoned Choices (i.e. Theory of Planned Behaviour)
Normative and Moral Concerns	Value-Basis
	Environmental Concerns (i.e. New Environmental Paradigm)
	Moral Obligations (i.e. Normal-Activation Model; Theory of Normative Conduct)
Affect	Role of Affect and Symbolic Factors
Mixture of Cost/Benefit, Normative and Affect	Goal Framing Theory
B. Contextual Factors	Experimental Designs, Modelling and Perceived Results from Interviews and Surveys
Directly Affect Behaviour	
Mediated by Motivational Factors	
Moderate Between Motivation and Behaviour	
Determine Type of Motivation	
C. Habitual Behaviour	Response-Frequency Measure

Source: Derived from work by Steg and Vlek (2009).

2.4.1 Motivational Factors

For Steg and Vlek (2009), motivational factors are divided into four areas. The first is the concept of cost/benefit which explains that individuals weigh the cost

(e.g. amount of effort, monetary expense and time) and the benefit to themselves and make an intentional and rational decision. This idea, that individuals are rational in their decision making, has been heavily used by the discipline of economics, though it is widely acknowledged that few people act in this manner for every decision (Hall, 2014). These rational decisions may be driven by independent variables relating to the individual (e.g. demographic information, values, attitudes, social norms, costs, benefits, etc). Cost/benefit research has used the Theory of Planned Behaviour (TPB) survey instrument to measure individuals' intent to act (Ajzen, 1991). The TPB positions that intention is determined by an individuals' attitude towards the behaviour, subjective norms and perceived control (Ajzen, 1991). Relevant examples of the use of TPB include investigating guests' willingness to pay conventional prices for a green hotel (Kim and Han, 2010) and how green attributes of a hotel may effect customer loyalty (Lee, Hsu, Han and Kim, 2010).

Normative and moral concerns may also motivate behaviour. Value-based studies have found that the more individuals' subscribe to values beyond themselves (e.g. altruism, pro-environmental values, and prosocial) the more likely that individual will act on pro-environmental behaviour (Stern, Dietz, Kalof and Guagnano, 1995; De Groot and Steg, 2008). Environmental concerns of an individual have been measured predominately using the New Environmental Paradigm survey instrument (Dunlap and Van Leire, 1978). Dunlap and Van Leire (1978) and later Dunlap, Van Leire, Mertig and Jones (2000) report that higher environmental concerns commonly relate to pro-environmental behaviour.

Moral obligation studies use the norm activation model (Schwartz, 1997) or the value-belief-norm theory of environmentalism (Stern, *et al.*, 1999). They

have been shown to strongly explain how low behavioural cost, and not high behavioural cost, affect environmental behaviours such as policy acceptability (Steg, Dreijerink and Abrahamse, 2005), willingness to change (Stern, *et al.*, 1999), and environmental citizenship (Stern, *et al.*, 1999).

Another area of research applies social norms from the theory of normative conduct (Cialdini, Reno and Kallgren, 1990). According to this theory there are two type of norms: injunctive norms which refer to the level of approval or disapproval society puts on a behaviour and descriptive norms which refer to the perceived level of commonness for a given behaviour. This theory has been applied to an experiment on littering in public (Cialdini, *et al.*, 1990).

Additionally, the role of affect and symbolic relationship has been applied to understand motivational factors. That is, how behaviours make a tangible difference (affect) or are performed for less tangible rewards (symbolic). Affect and symbolism are expanded upon by Dittmar's (1992) theory that material goods fulfil the functions of instruments, symbols or affect. This theory has been tested by Steg (2005) finding a relationship between car choice and symbolic and affective motives with instrumental function playing a lesser role in which car people chose to drive.

Finally, motivations may be influenced by a mixture of the factors already discussed (cost/benefit; affect; moral and normative concerns). Research in this area (e.g. Guagnano, Stern and Dietz, 1995; Stern, *et al.*, 1995; Health and Gifford, 2002) reports that behaviour is a result of multiple motivations. Steg and Vlek (2009) suggest that goal framing theory may be a logical tool for investigating this phenomenon. Goal framing theory proposes that goals direct

how individuals process information and then act upon that information. However, Lindenberg and Steg (2007) find this theory has had limited use in understanding environmental behaviour.

2.4.2 Contextual Factors

Contextual factors are aspects of an individuals' environment that may affect their behaviour. As behavioural flipping is a main topic for this research, contextual factors are important to understanding and informing the current research as they may or may not cause behavioural flipping of water behaviour from home to tourism accommodation.

Change in location (contextual factors) may directly affect behaviour such as the lack of a bath forcing an individual to shower. Contextual factors may be 'mediated by' motivational factors such as demographics, personal norms or attitudes. An example of this is towel reuse schemes resulting in a more positive attitude towards other water conservation behaviour in the guest room for individuals that have predetermined positive attitudinal leanings towards towel reuse schemes. These factors may also be 'moderated between' motivational factors and behaviour. For example, shower timers may only reduce water usage among people with high environmental concerns or identities and not in those with lower levels of concern. And finally, it is possible that contextual factors may 'determine which type' of motivation most strongly affects behaviour. An individual motivated by social acceptance may report water leaks if requests to do so are publicly displayed while an individual motivated by altruistic goals may report leaks even if it is not requested.

It is important to recognize that contextual factors are not only within the site of practice. Pearce, Suraje and Barr (2012) explained that perceived water scarcity and availability can influence personal behaviour with regard to this resource. They suggested, if a stakeholder believes water is plentiful in England, they may be less likely to act on conservation efforts. Additionally, they identified a blame culture in water conservation where consumers placed the responsibility of efficiency on utility companies, potentially heightened since they have become privatized in England in 1989, while governing bodies (e.g. Government, utility companies, regulatory bodies, etc.) place responsibility on the individual to make responsible choices (Pearce, *et al.*, 2012). In the context of this research, to better understand factors influencing behaviour within the tourism accommodation, this observation of external pressures influencing the contextual nature of behaviour may suggest a need for including broader stakeholders. Including a diversity of stakeholders may ensure these external factors are acknowledged.

2.4.3 Habitual Factors

According to Steg and Vlek (2009), habitual behaviours occur under 'automated cognitive processes' (p.312). The response-frequency measure, created by Aarts and Dijksterhuis (2000), investigates the way behavioural choices are made. Aarts, Verplanken and Van Knippenberg (1998) identified important characteristics of habits: they require a goal to be achieved; if satisfactory outcomes occur they are more likely to be reinforced, and; they are mediated by mental processes that link a situation with a response and the more common the situation and response the more the response becomes embedded into that

situation. A relevant example of habitual behaviour research was the study of temporarily forcing habitual car users to use public transportation which resulted in lower long-term car use (Fuji and Gärling, 2003).

2.4.4 Initiatives to Change Behaviour

Efforts to change behaviour have been called interventions, initiatives or strategies in the literature. Here, these terms will be used interchangeably. According to Geller, Winett and Everett (1982) and later refined by Steg and Vlek (2009), one method for categorizing interventions is antecedent versus consequence strategies. Antecedent strategies aim to change behaviours prior to their occurrence such as educational campaigns, modelling, and providing information on options as well as the positive and negative outcomes to the behaviour. Consequence strategies deal with the behaviour after it has taken place to change future occurrences through efforts such as feedback, rewards and penalties. Another manner to categorize interventions is by informational versus structural. Informational strategies may include education, persuasive and social support such as role modelling while structural strategies may include availability, regulation and changing prices (Steg and Vlek, 2009).

2.5 Water Efficiency Behaviour in the UK Home

Building upon the reviewed theory of general environmental behaviour, this section intends to investigate water use behaviour in the home. To better understand behavioural patterns, the general perceptions of water use will be examined in this context. Usage patterns and efforts to segment water users

into distinct lifestyle groups in the home will also be reviewed. And finally, barriers and drivers of behaviour will be investigated. Ultimately this understanding will be used to inform spill-over and aid in better understanding water behaviour whilst on holiday.

Reporting on attitudes towards water, in a study of home water behaviour, DEFRA (2009) found a general lack of knowledge and caring for water efficiency by the UK public. Furthermore, they reported low motivations to change behaviour, combined with little knowledge, leading to low levels of efficient water use. In this same study, most participants were unaware of the severity of water scarcity issues in the UK.

Investigating life-style groups in Devon, UK, Barr and Gilg (2006) reported water behaviour in the home as a habitual behaviour. The 2009 DEFRA report is in agreement, finding 'water usage is based on ingrained habits, beliefs that water is plentiful and a right, as well as a lack of conscious awareness and knowledge about the issue' (p.10). Additionally, low awareness of water's interaction with other resources such as energy usage from hot water was prevalent.

In Wales and England, each person uses an average of approximately 150 litres per day (Ofwat, 2011). The lowest amount of use is in the Southeast where Veolia Water East customers use an average of 120 litres per day (Ofwat, 2011). Why averages vary between regions is still a topic of debate, however the UKWIR (2014) reported that the amount of homes on water meter in a region can explain much of this variation. That is, the more metering, the lower the regional average. The nation-wide average use of water has been falling for the past few years (South West Water, 2014). However, averages

have increased in areas with rises in single home dwellings (Ecologic, 2007). For example, in varying parts of Europe, the European Commission (2005) found households of two people had an average use of 300 litres per day while two single home dwellings used 210 litres per day per house.

Additionally, water is used disproportionately for different activities within the home. According to Waterwise (2014), 30% is used to flush the toilet; 21% for personal washing (taps and baths); 13% for washing cloths; 12% for shower; 8% for washing up; 7% for outdoor use; 4% for drinking and the remaining 5% for other activities. They noted that the amount of outdoor use may vary from location to location. This data was gathered from water companies and the private consulting firms of the Water Research Centre and UKWIR. However, this data should be viewed with caution as no information was provided for its' sampling methods.

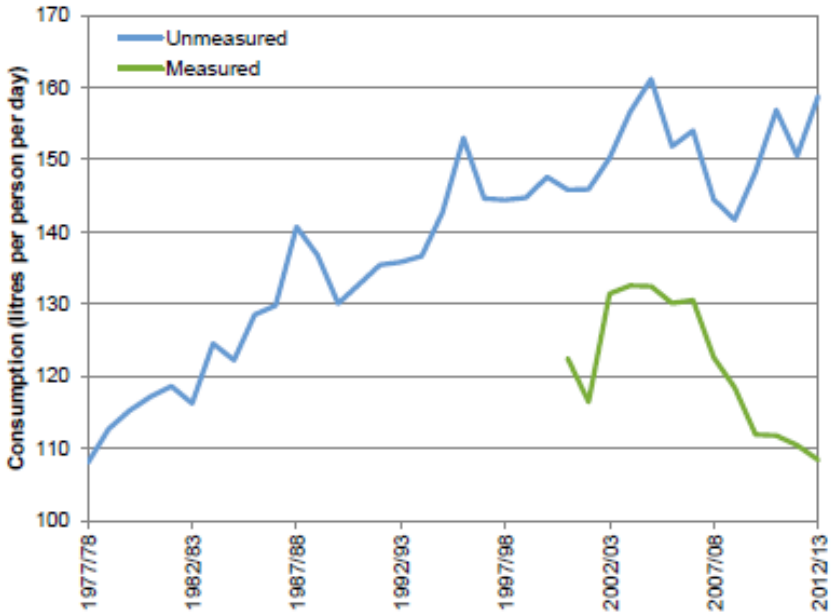
Using the concept of life-style groups explored previously, the UKWIR (2014) surveyed 1,500 UK residence. They found five main segments of water users in the home: Disengaged; Theory not Practice; Contemporary Lifestyles; Settled Residents; and, Conscious Consumers (Appendix 1). These five segments represented groups of people that vary in their behaviour, attitudes, and the drivers and barriers to adopt water efficient behaviours. The 'Disengaged' (28% of the sample) were characterized as having the weakest attitude and behaviour towards water efficiency. The 'Theory not Practice' segment (15% of the sample) were characterized as individuals that care highly about the environment but engage in little to no water efficient behaviour. The 'Contemporary Lifestyle' segment (22% of the sample) placed a low to moderate emphasis on protecting the environment and were only willing to engage in 'easy' water efficiency behaviours. 'Settled Residents' (15% of the

sample) had high positive attitudes towards the environment, thought about their water use and were open to ‘easy’ water efficiency implementation. Finally, the ‘Conscious Consumer’ (20% of the sample) showed the most positive attitudes toward the environment and commonly already engaged in water efficiency. Ultimately, this report emphasized younger people used more water than older individuals and non-home owners used more water then settled residents.

Research has suggested some positive correlation between region and water use (DEFRA, 2009; Whitmarsh and O’Neill, 2010; UKWIR, 2014). DEFRA (2009) and a report by water research firm CCWater (2006) found that areas of greatest water stress are also had the lowest usage per home. The UKWIR (2014) report primarily explained this phenomenon through the prevalence and absence of metering driving geographic discrepancies.

In most related studies, metering status has been identified as the number one driver for reducing home water usage (CCWater, 2006; DEFRA, 2009; UKWIR, 2014; South West Water, 2014). Figure 2.1 shows how drastic metering can reduce water use compared to non-metered residences. According to Ofwat (2011) the driver for metering is primarily realized cost savings for the customer where ‘metered charges provide a clear financial incentive for customers to use less water. When metered customers use less, they pay less’ (p.13).

Figure 2.1: Water use by Metered and Unmetered Households.



Source: South West Water (2014, p.49).

Barriers to changing behaviour in the home have been identified as time investment, personal hygiene and effort (DEFRA, 2009). According to the UKWIR (2014) report barriers also included low environmental attitude, age, low home ownership, not bill payers, lack of financial ability, lifestyle and large households (water efficiency was perceived to be too difficult).

2.6 Guests in Tourism Accommodation

In the following sections, water usage patterns of guests in tourism accommodation are investigated to understand different drivers and barriers to their behaviour. Particular attention is focused on towel reuse schemes. While participation in towel and linen reuse schemes are just one guest behaviour, the amount of studies on this subject and the varying interventions used to change

guest behaviour make an extensive review of this literature important to the current research. The goal of this section is to develop a foundation for understanding how water is used whilst on holiday and the motivations behind said use.

Many studies exist in the literature attempting to explain guest attitudes towards green products and environmental behaviours. For example, some literature has focused on how guests perceive general environmental efforts by tourism accommodation to aid in marketing green efforts to customers. In one such study, Yi, Li and Jai (2016) reviewed 7370 comments on the online booking website, TripAdvisor, to determine guests' perception of best green practices. They reported that the majority of green initiatives by hotels were positively perceived. However, they also found some guests alleged efforts were a marketing tool and/or to gain financial savings. Yi, *et al.* (2016) also report some practices were more positively perceived then others. Specific to water, claims of 'lower water pressure' were negatively perceived by guests. The presence of general scepticism toward hotels' green efforts by some guests has also been reported by Shang, *et al.* (2010).

Not only may guests be sceptical of environmental efforts by accommodation, their motivation may also vary from home. As Miao and Wei (2013) reported, home behaviour was driven by norms (a desire to act like family members or neighbours) while actions in a hotel setting were driven by hedonistic motivations (anything that pleases the individual). If the contextual nature of the hotel experience creates a hedonistic experience, this could increase the use of water for convenience and comfort which Shove (2003) identified as needs and services provided by water. Therefore the willingness of guests to engage in water efficiency efforts is important to understanding the

current research. More recently, Gössling, *et al.* (2015) identified that 'evidence suggests that a large majority of guests are open to a moderate degree of involvement' (p.101). However, they also recognized that many attitudes concerning water use in tourism accommodation are needing to be better understood. This includes the level of scepticism specifically toward towel reuse schemes, how expectations of luxury may affect water behaviour, who guests believe is responsibility for saving water and how specific segments will react to messaging. As such, many opportunities exist to add to the current understanding of guests' attitudes concerning water use in tourism accommodation.

If guests are truly willing to reduce water usage, then identifying behavioural patterns will aid in identifying where and when such efforts could be applied. It is important to first acknowledge, again, that guests have limited access and ability to affect water use within the tourism accommodation. Therefore identifying what and where guests are capable of controlling water use is essential. To this point, Table 2.2 represents average water use by location within the hotel from three distinct studies reviewed by Gössling, *et al.* (2012). While caution is needed in deriving generalization over a varied industry, the findings show that guestrooms are a substantial site of water use. Gössling, *et al.* (2015) present similar findings, further indicating the guestroom is an area of comparatively high water consumption.

The timing of use may also aid in understanding behavioural patterns. Studies focusing on the timing of use have been followed out by Deng and Burnett (2002) and Rankin and Rousseau (2006). Figure 2.2 represents typical daily use of water on a guest floor in a Hong Kong hotel by Deng and Burnett (2002). Peaks occurred at 8:00 am and 10:00 pm with high usage at night from

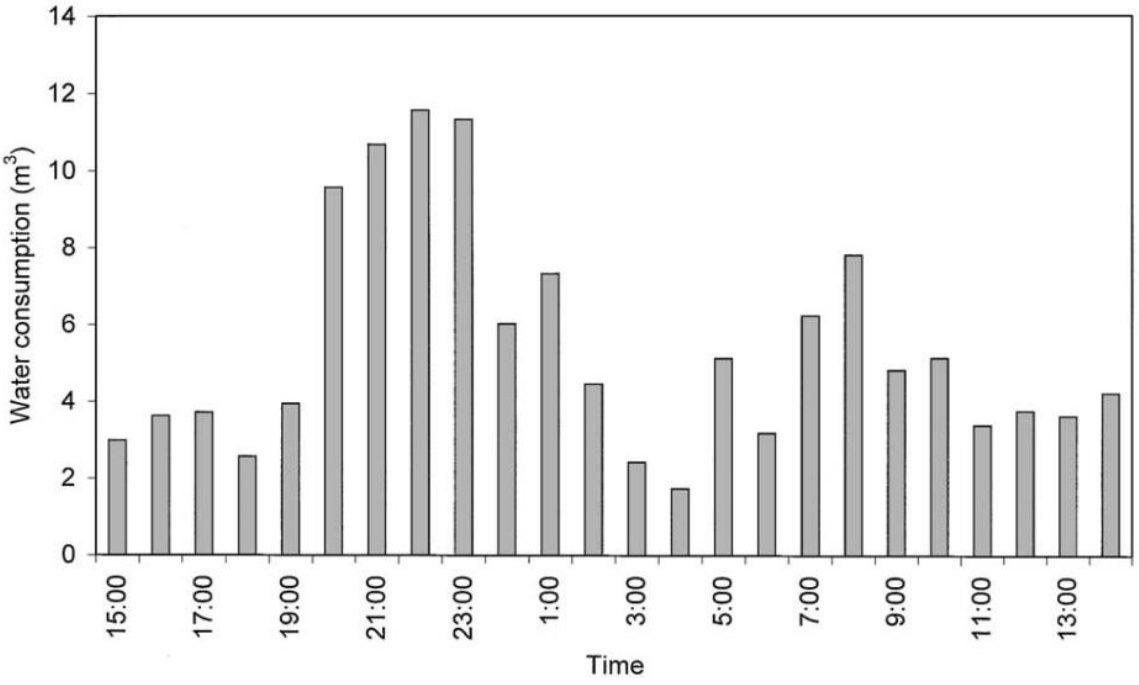
8:00 pm until 11:00 pm with the authors attributing this to shower use. Rankin and Rousseau (2006) found 60% of hot water was used between 6:00 am and 1:00 pm in a South African hotel, offering it may also have been due to showering. Therefore the general patterns suggest that mornings and evenings are times for greater water usage and showers are a prime usage point.

Table 2.2: Location of Water Use within a Hotel.

Location	**Estimated % of water used**
Guestrooms	28%
Garden	26.5%
Kitchen Restaurant	15%
Laundry	14.98%
Pool	8.78%

Source: Derived from work by Gössling, *et al.* (2012).

Figure 2.2: A Hong Kong Hotel's Water Consumption during a Typical Day.



Source: Deng and Burnett (2002, p.61).

Towel reuse schemes are an area of study receiving high attention on changing guest behaviour to promote water efficiency within the guest room. These reuse schemes are efforts by tourism accommodation to have customers use their towels more than once. Some business also offer linen reuse schemes, enabling the guests to not have their bed linens changed each day. Griffin (2001) estimated savings from towel and linen programs of $6.50USD per occupied room per night for each participant in both schemes, as reported in Bohdanowicz (2006). These savings are also seen in environmental gains. The average water use of three papers reviewed in an international meta-analysis (Gössling, *et al.*, 2012) reported that in-house laundry services represented an average of 14.98% of total hotel water use. Due to the large financial and environmental impacts of laundry services on tourism accommodation, reuse schemes have been studied in abundance. Additionally, towel reuse programs are popular among guests. As referenced in the 2002 work by O'Neill, *et al.*, 87% of guests appreciated a towel reuse program, while only 5.2% did not. The majority of guests surveyed also wanted towel reuse schemes expanded industry-wide with linen programmes included.

The first research into this area of study was conducted by O'Neill, *et al.* (2002), concentrating on the hotel industry of Seattle, USA. Two large hotels represented individual case studies and researchers found a range of factors keeping hotels from implementing towel reuse programmes. They also reported an estimated 5-25% participation by guests in such programmes depending on the establishment. The work represented the only research in this topic which directly incorporated businesses.

Instead, other efforts have focused on how to encourage guest to reuse their towels with Goldstein, Griskevicius and Cialdini (2007) conducting the first

research into this topic. Their research first exemplified the ability to change guest behaviour through altering in-room messaging. Throughout this thesis, messaging is defined as any form of communication (e.g. written instructions, online text, spoken instructions, etc.). They found with the most generic messages (i.e. 'Please help save the environment….'), 30% of guests participated in the scheme. When they changed the message to include helping future generations they saw no significant changes (30.7%). No significant changes were reported for a promise to donate to charity (30.7%). However, a significant increase was observed when the message was changed to include a reciprocal donation (i.e. 'we have already donated savings from this programme to….') (45.2%) and a significant decline was reported in participation for a message concerning benefiting the hotel (i.e. 'our costs are very high and your participation helps keep costs down') (16%). This research was then continued by Goldstein, Cialdini and Griskevicius (2008) where localized descriptive norms (i.e. 'most guests in this hotel room participate in the programme') significantly increased participation. In their study, localized normative language increased participation rates from 35.1% to 44.1%, representing an increase of 9%.

These first studies were followed by a plethora of similar work. For example, Schultz, Khasian and Zaleski (2008) replicated these previous studies, adding a few additional messages, and found a combination of injunctive norms (i.e. what an individual feels they should do in a specific context) and descriptive norms (i.e. going along with what everyone else is doing) significantly increased participation. Shultz, Khazian and Zaleski (2008) also reported that towel reuse behaviour appears to be affected by non-automated responses unlike showering and other tap behaviour.

This was followed by Mair and Bergin-Seers (2009) whom tested the need for informative texts in articulating the importance of reusing towels and the potential of donations to increase participation. They found participation rates significantly increased with the addition of information and not with the addition of an offer of a donation.

This was similar to findings from Shang, *et al.* (2010) whom reported guests stated an increase in both participation and loyalty to the business when the message claimed the business had previously (reciprocally) donated savings to a charity and not just the promise of a future donation. They also found messages stating participation would provide savings for the business, decreased participation and loyalty. Additionally, they reported a need to deter guest scepticism toward environmental efforts. They therefore recommended retrospective donations and use of the company logo in any messaging to deter guest scepticism. Another relevant finding was that frequent business travellers reported no significant difference for their intention to participate in towel reuse schemes to those individuals traveling less often for business. This research applied the process of social marketing and will therefore be heavily highlighted in later sections.

In a somewhat different approach, Blose, Mack and Pitts (2015) tested the use of loss aversion, (individuals are more likely to act to not lose something rather than gain the same amount) finding a significant increase in towel reuse scheme participation when the concept was added to messages. As many of the previous efforts were conducted in the USA, these studies would later be complimented by Reese, Loew and Steffgen (2014) whom applied similar effort to hotels in Europe, finding efforts to change guest behaviour through messaging was also effective in international destinations.

Other research in this area has focused on a diversity of other topics. For example, Baca-Motes, *et al.* (2013) tested the influence of making written, verbal and/or public commitments to reuse towels on behaviour. They found a written commitment and wearing a pin, as a form of public commitment, significantly increased participation. Gössling, *et al.* (2015) reported more general findings and examples from practitioners. For example they explained seasonality and locality to certain activities (e.g. swimming pools and the ocean) heavily influence towel reuse participation rates. Finally, aiming to better describe messages currently being used in hotels to encourage towel reuse, Lee and Oh (2014) examined a diverse sample of messages from hotels, reporting a complexity of theory (such as those highlighted previously) already applied in practice.

Importantly, this review highlights several key issues still needing clarification in the literature. First, previous research has focused primarily on initiatives created by, and for, larger tourism accommodation firms. For example, the international hotel corporations ACCOR and Starwood have begun introducing incentives for participation in towel reuse schemes and incentives have featured prominently in the literature (e.g. Mair and Bergin-Seers, 2009; Shang, *et al.*, 2010). However, no efforts have been made to test these types of interventions in smaller firms, perhaps due to needing large guest participation rates. Therefore an opportunity exists to address this gap in understanding the viability of interventions in smaller business.

Additionally, this research shows a wide range of efforts to change guest behaviour in the tourism accommodation to date. However, participating in towel reuse schemes is only one behaviour and no studies could be found that have measured the impact of interventions on other guest behaviours to

promote water efficient behaviour. This is increasingly important as Shultz, *et al.* (2008) find general water use behaviours and towel reuse schemes are driven by different cognitive processes. They may therefore need different interventions, highlighting another gap in the literature. Therefore an opportunity exists to better understand the promotion of more general (e.g. shorter showers, turning off taps when not in use, use of dual flush toilets, etc.) water use behaviours within the tourism accommodation.

2.7 Home and Away

As previously explained, spill-over in behaviour from home and away is a vital issue to this thesis. To further the understanding of spill-over, this section will examine research on this topic. However, all previous efforts have only presented water use behaviour as a subset of an overall understanding of environmental behaviour. One such study was Miller, Merrilees and Coghlan (2014) whom quantified behavioural flipping from home to urban holidays in Melbourne, Australia. Researchers collected 451 online surveys by participants whom had visited Melbourne in the past two years and had an interest in the idea of a green Melbourne. They were asked: pro-environmental behaviours in the resident's home city; environmental attitudes; environmental behaviour and barriers to said behaviour on holiday; open-ended questions regarding Melbourne's sustainability credentials and, finally; socio- demographic information.

Findings suggested that tourists' behaviour differed only slightly whilst on holiday then at home (Miller, Merrilees and Coghlan, 2014). However, some tourism pro-environmental behaviours were actually higher on holiday then at

home (use of public transportation and walking/cycling where possible). All other pro-environmental behaviours were lower on holiday, yet very similar. The most comparable where buying organic (96% participate as tourists/participate at home), use of air conditioners moderately rather than to extreme temperatures (95%), I save water (95%) and I switch lights off when not in use (91%). Additionally, multiple regression was conducted to analysis behaviours with regard to independent variables (habits, availability, congestion, break from duty, tourist responsibility, concern for the environment and love for the environment) to determine the reason for engaging or not engaging in a given behaviour. In these results, water was grouped with minimizing use of lights and referred to as 'green sustainable energy.' 'Green sustainable energy' use was strongly explained by habits, fairly explained through tourist social responsibility, moderately influenced by love of the environment, moderately influenced by availability, and marginally influenced by taking a break from normal life at home.

However, other research has found differences in attitudes between these two sites of practice. For example, Miao and Wei (2013) found normative motivations drive behaviour at home and hedonic motivations drive behaviour in hotels. Additionally, Bakhtiar, *et al.* (2014) found many guests are unwilling to compromise personal privacy, preferences or hygiene for environmental initiatives in tourism accommodation. Other studies have also found conflicting results of behavioural flipping to those of Miller, *et al.* (2014).

One such study was conducted by Dolnicar and Grün (2009) in Australia. Using online surveys with 798 accommodation guests, they segmented their audience using cluster analysis with 20 environmental behaviours, finding six distinct segments. They then investigated behavioural flipping through cross-

tabulation of segment membership, finding individuals moved from some segments indicating moderate levels of changes in membership from home and away. This led them to conclude 'the direction of the shift is clear: people become less environmentally friendly when they move from their home context/environment into the vacation context/environment (p.22).' Through coding of open ended questions they explained why individuals may have higher efforts at home: 'consequences are felt more directly, that the infrastructure is available and pro-environmental behaviour is consequently easier to implement, and that a vacation is a break from everything, where one wants to be selfish and not worry about being responsible (p.23).'

Similarly, Barr, *et al.* (2010) and others publishing from the same research effort (Barr, *et al.*, 2011b; 2011c) review the assertion that individuals with high levels of environmental commitment to the environment at home are also those less engaged in some sustainable actions on holiday. Again, water behaviour was not the primary focus of their research but a subset of the findings. A questionnaire surveying 202 individuals was conducted in the city of Exeter, UK. Participants were asked to rank their environmental behaviour at home from a 1 (never) to a 5 (always), demographic information and overall environmental commitment. In order to generate lifestyle groups, cluster analysis was conducted and three distinct clusters were found. Cluster profiles demonstrated socio-demographic differences with Cluster 1 being the oldest group with a higher number of retirees in smaller households; Cluster 2 was younger employed individuals in larger households; and Cluster 3 was made up of middle aged individuals. Willing survey participants were then recruited from each cluster to participate in focus groups. Importantly, the amount of spill-over significantly varied between each life-style group. They concluded that 'findings

suggest that the theoretical notion of spill-over is partly mediated by the site of consumption and also the characteristics of individuals concerned' (Barr, *et al.*, 2011c, p.1239).

Expanding on these efforts, Juvan, *et al.* (2016) use an online survey with 2785 respondents to better understand why tourists do not behave the same at home as on holiday. They segmented their population based on five justifications for behavioural flipping and found 11 segments. These statements were based on findings from Juvan and Dolnicar (2014) whom identified six justifications for reducing effort on holiday through the use of focus groups. The six justifications were downward comparison (e.g. 'I could be even worse'); exception handling (e.g. 'holidays are a holiday, it's ok on holiday'); denial of consequences (e.g. 'The impacts aren't that bad'); denial of responsibility (e.g. 'I would but…'); compensation through benefit (e.g. 'But I'm learning so much about the environment on this trip'); and, denial of control (e.g. 'It is the systems that are the problem'). Through further investigation of three segments, selected because of their high potential for successfully changing behaviour, they concluded that messaging as an initiative can aid in reducing flipping.

The discrepancy between findings that spill-over does occur (Miller, Merrilees and Coghlan, 2014) and findings that it does not (Dolnicar and Grün, 2009; Barr, *et al.*, 2010; Barr, *et al.*, 2011b; 2011c; Juvan, *et al.*, 2016), suggest that more research is needed. That every study used water behaviour as only a subset of general environmental behaviour also represents an opportunity to explicitly investigate water efficient behaviour independently. Such an investigation would allow water behaviour to be the primary focus and not be 'clouded' by other behaviours.

2.8 Tourism Accommodation Manager Behaviour

This section will aim to identify opportunities available to accommodation managers to reduce water use. It will also investigate the level to which current efforts are being implemented in South West England, identifying drivers and barriers for their adoption. Understanding the willingness of managers to implement environmental initiatives has been studied extensively (e.g. Carmona-Moreno, Cespedes-Lorente and Burgos-Jimenez, 2004; Mensah, 2006; Nikolaou, Vitouladitis, and Tsagarakis, 2012). An examination of all of the literature in this area is not practical here, instead those most relevant to the current study will be reviewed. Relevance was determined through mention of water reduction, geographical location near the research study area or connection to social marketing.

Additionally, within the tourism accommodation there are typically two primary stakeholders: guests and managers. Staff could be considered a third stakeholder, however, in this study staff behaviour will be conceptualized as a direct product of managerial policy and enforcement and thus fall under managerial behaviour.

Specific to the location of this study, Coles and Zschiegner (2011) sampled 417 hotel managers to understand efforts to combat climate change, comparing members and non-members of hotel networks. Due to its location (Exeter) and prevalence of water behaviour data, findings from this study are considered seminal to the current efforts. Notably, average water bills represented 6.8% of a hotels' total expenditures. Importantly for the current research, Table 2.3 shows the percentage of hotels participating in water saving efforts. Water saving devices are the most prevalent action with towel reuse

agreements offered at roughly half of the surveyed establishments. Smart metering and grey water systems were the lowest reported efforts.

Table 2.3: Reported Hotel Water Efficiency Efforts in South West England.

Reported Hotel Actions	**Amount of Participation**
Water saving devices	62.1%
Towel agreement	51.8%
Efficient showerheads/taps	51.6%
Environmental management targets	37.4%
Appointed environmental manager	18.0%
Smart metering	16.1%
Grey water system	7.9%

Source: Coles and Zschiegner (2011, p.123).

Studies in other geographic locations have found higher amounts of hotel participation in water efficient efforts. For example, Mensah (2006) investigated environmental management systems in 52 hotels in Ghana. She reported 58% of hotels had an environmental management systems, 74% of guests reused linens and towels and 67.3% of hotels used low flow showerheads or sink aerators. This represented a higher number of hotels incorporating low flow showerheads then in the Coles and Zschiegner (2011) study. Bohdanowicz (2005) also reported higher efforts when surveying 610 European hotel managers. She identified 76.95% of hoteliers participated in water efficient measures, though these measures were not defined. Additionally, Bohdanowicz (2006) surveyed 349 hoteliers in Poland and Sweden finding 68.05% (higher then South West England) had a towel reuse programme and 53.1% (lower then South West England) implemented water efficient fixtures. While it should be noted that research was conducted at varying times and locations and methods may not have been congruent making direct

comparisons difficult, never-the-less, these comparative findings suggest a relatively low to moderate level of water efficient programs in the South West of England.

Coles and Zschienger (2011) also report what motivated hotels to adopt climate change initiatives. Table 2.4 shows the three statements with highest combined modes all revolved around the financial security of the business: 'the economic case;' greater 'business benefit;' and 'more grants.' This was supported by findings by O'Neill, *et al.* (2002) and Carmona-Moreno, Cespedes-Lorente and Burgos-Jimenez (2004) whom also found cost savings was the most effective driver for management decisions on increasing water efficiency.

Table 2.4: Drivers for tourism Accommodation Businesses to do more to Address Climate Change.

We would do more to address climate change if:	Member^	Non^
*The economic case was clearly proven	4	4
*There were greater business benefits to us	4	4
*There were grants to help with monitoring	4	4
**Messages in the media were more trustworthy	3	4
**There was a clear one-stop shop for advice	3	4
**Best practice examples were available	3	4
**We had equipment to monitor energy use	3	4
It was easier to understand our [utility] bills	3	3
**Our trade association recommended it to us	3	4
Our main competitors did more than us	3	3
Competitors gained advantage by doing more	3	3
We had more time	3	3
We were forced to by law	3	3
There was free access to training	3	3
By doing nothing, our business may be threatened	3	3

^Mode Score: 1=strongly disagree, 3=neither agree nor disagree, 5=strongly agree
***** Represents both groups mode was a 4
****** One groups mode was a 4
Source: Coles and Zschiegner (2011, p.125).

Gössling, *et al.* (2015) find, referring to water conservation, 'there is a general understanding that the management in most hotels will not engage in any management measure if this does not lead to cost savings or is otherwise required, e.g. by law.' (p.94). In the Coles and Zschiegner (2011) study, four of the next five highest rated barriers revolved around convenience: 'one-stop shop;' 'best practice available;' 'had equipment;' and 'trade association recommendation.' It is important to note that these drivers and barriers are presented for more general environmental behaviour and not water specifically. Minimal literature could be identified specifically focusing on managers' water efforts within tourism accommodation, again representing an opportunity to contribute further research in this area. Additionally, these findings are with hotels exclusively. The addition of B&Bs, self-catering, campgrounds and variation in the size of the businesses could also aid in the overall understanding of how to direct efforts for water use reduction in South West England.

With regard to size of the tourism accommodation business, previous literature has stated larger firms engage in Corporate Social Responsibility (CSR) through justifying the business case (Font, Garay and Jones, 2014). Instead, smaller firms show both different motivations and barriers to engaging with CSR to those of larger firms (Morsing and Perrini, 2009). For example, Fassin, Van Rossem and Buelens (2011) found decision-making in smaller firms is often not linked to profit and is instead an extension of the owner-manager's attitudes. Compared to larger firms, smaller firms may have the advantage of adopting or changing sustainable practices more quickly (Condon, 2004). However, their disadvantages have been described as possessing less capital, lacking information on market opportunities, having higher risk

exposure, missing structured management systems and not engaging in long term planning (Ateljevic and Doorne, 2000; Dewhurst and Thomas, 2003).

As identified in previous reviewed studies, the ability to communicate efforts to guests is of great interest. One means to advertising efforts is through certification schemes. While a full review of certification schemes and 'green marketing' are beyond the scope of this thesis, a few relevant and contemporary studies will be presented here. For example, Segarra-Ona, Peiro-Signes, Verma, and Miret-Pastor (2012) analysed the value of certification schemes to better tourism accommodation environmental efforts in Spain. Through quantitative analysis of 2,116 tourism accommodation firms they found certification in the Spanish specific ISO 14001 scheme significantly increased economic performance. However, this was only in larger firms, where smaller rural firms saw no increase in economic performance as a result of certification. Sampaio, Thomas and Font (2012) add that smaller firms commonly adopt certification programs to reflect their environmental values and not for financial benefit. Furthermore, Font (2002) found schemes are ignored by many guests due to their complexity and a lack of efficacy that they provide meaningful environmental gains. Therefore the economic value of such programmes appears to be low for smaller businesses and in need of better communication to guests.

Font, *et al.* (2016) suggest the issue of communicating efforts to guests is even more complex. Reviewing accommodation websites and comparing their stated claims to their actual efforts, Font, *et al.* (2016) reported tourism accommodation in their study only communicated 30% of their efforts to their guests. They offer the term 'greenhush' to describe this phenomenon where businesses only advertise the least contentious issues to display their efforts.

An example is the issue of climate change where the topic could be considered contentious by some guests and thus businesses avoid communicating their beliefs or efforts toward this issue in order to keep from losing customers over differences in ideologies. This study highlights the delicate balance tourism businesses have with advertising their efforts. That is, they must ensure they do not offend guests when advertising environmental efforts.

2.9 Chapter Summary

This chapter aimed to better understand pro-environmental human behaviour, concentrating on water efficiency. The conceptual debates of Shove (2010; 2011) and Whitmarsh *et al.* (2010) highlighted how human behaviour is viewed differently by academic disciplines which prescribe to varying epistemological views and methodologies. In recent years the UK government and academic researchers have augmented this debate through the use of lifestyle groups to quantify and qualify human behaviour. Lifestyles have been understood through grouping individuals into segments with similar behaviours and attitudes towards the environment.

Specific to water use in the UK home, many trends and varying barriers and drivers exist to behaviour. Key findings include metering status as a driver for reducing water use; younger people use greater amounts of water compared to older individuals; and, there is a general lack of caring and knowledge about the problem. The UKWIR (2014) study presents efforts to segment the general population by water use behaviour and provides recommendations for reaching each segment to promote water efficiency. This work represents a desire by water stakeholders to use segmentation to better understand and promote

water efficiency. Similar efforts, specific to water use, in a holiday context have yet to be conducted and represent an opportunity for unique research.

Past efforts have been made to better understand the phenomenon of spill-over. Here, spill-over was described as behaviour patterns occurring at the same rates from home to holiday. Research focusing on spill-over from home to holiday have focused on general environmental behaviour, with water behaviour as a subset of overall findings. Mixed results have been presented with Miller, *et al.* (2014) finding a high level of spill-over and others finding low levels of spill-over (e.g. Dolnicar and Grün, 2009; Barr, *et al.*, 2011b). This discrepancy represents an opportunity for further understanding this process, with a focus on water specific behaviour as an original research avenue. Spill-over is important to the current effort because if behavioural flipping occurs from home to holiday, it would indicate a clear need to intervene at the point of the holiday experience. However, the habitual nature of water use may prove behaviours do not flip in varying sites of practice and therefore home behaviour could be targeted to also influence holiday behaviour.

High water use has been reported in the guestroom in several studies (Gössling, *et al.*, 2015). This use was primarily driven by showers and baths, then toilets and then faucet taps (Aulbach, 1995; Polansky, *et al.*, 2008). The examples of reuse schemes provided evidence that managers can affect guest behaviour, increase guest attitude towards the accommodation, lower water use and increase profits. Due to a lack of studies focusing on changing guest behaviour for non-towel reuse schemes, an opportunity exists to further investigate the application of initiatives to promote water efficiency for more general water use. Additionally, several attitudes concerning water are yet

resolved (e.g. scepticism of towel reuse programmes and willingness to pay more for water efficiency).

Finally, managers are an integral stakeholder in this promotion. In South West English hotels, a low to moderate amount of these behaviours have been recorded by Coles and Zschiegner (2011) compared to other similar studies. However, previous efforts have mostly concentrated on more general environmental behaviour and not exclusively water use. Therefore, an opportunity exist to focus solely on water issues, providing a deeper level of detail then has been previously explored. This research aims to address these gaps in the literature and resulting unique contributions are presented in the concluding chapter.

Chapter Three- Literature Review: Social Marketing, Tourism and Water

3.1 Introduction

One tool being applied to human behaviour aiming to reduce consumption is social marketing (Peattie and Peattie, 2009). Social marketing uses classical marketing techniques to change behaviour for a social cause (Andreasen, 2002). However, how do you target a behaviour and who determines what is considered a social cause? Issues such as these will be reviewed through an extensive review of the literature with the purpose of understanding how social marketing has been used to date in the areas of tourism and water.

This chapter will explore the definition and progress of social marketing from classic marketing theory to a commonly used tool for behaviour change embedded in service dominate logic. The process of conducting a campaign will be reviewed and best practices identified. Social marketing examples will highlight how this tool has been used in tourism and to change water behaviour. Then, theoretical and practical criticisms will be presented to gain a more robust understanding of the subject. And finally, the chapter will conclude by outlining some gaps in the social marketing literature representing novel opportunities for applying it to the project aim.

3.2 Defining Social Marketing

For Adcock, Halborg and Ross (2001), marketing is defined as the methodology of communicating the value of a service or product to potential buyers for the intent of sale. The interest in applying this methodology to social causes was first expressed by the question: 'Why can't we sell brotherhood like we sell soap?' (Weibe, 1952). This question marked the origin of social marketing, first asked in the title of an article by G.D. Weibe in 1952 in the *Public Opinion Quarterly* (Shaw, *et al.*, 2013). The term 'social marketing' would be created by Kotler and Zatlman in 1971 and refer to applying marketing methods to progress socially beneficial products and ideas (Shaw, *et al.*, 2013). While the concept of social marketing was formed in the 1950s, it found its' niche in the 1990s as a tool for behaviour change (Andreasen, 2002). Most notably, social marketing has been used in public health efforts, for example, to reduce alcoholism, smoking and obesity (Gordon, McDermott, Stead and Angus, 2006; National Social Marketing Centre, 2006; Hastings, 2007). It has also been used for social issues such as rape prevention and safety (Fox and Kotler, 1980) and to promote the environment (McKenzie-Mohr, *et al.*, 2012). Due to this wide range of applications, social marketing has developed varying frameworks to refer to the same concept. For example, Kassirer and McKenzie-Mohr (1998) refer to the framework as 'tools of change,' McKenzie-Mohr and Smith (1999) use 'community-based social marketing' and Adreasen (2006) refer to it as 'the social marketing process.' Each framework has its own unique stages. These difference represent both the vast interest in the subject and the wide range of opinions within the literature.

While social marketing has been used extensively to promote pro-environmental behaviour (McKenzie-Mohr, *et al.*, 2012; Hall, 2014), other marketing approaches have also aimed to address environmental issues (Peattie and Peattie, 2009). Table 3.1 presents some of these terms, identifying their citation and definition. However, according to Kilbourne and Beckmann (1998), many of these concepts fall short of addressing sustainability because they do not address the paradigm of infinite growth, instead promoting different forms of consumption. In contrast, Peattie and Peattie (2009, p.262) find 'a form of marketing which is rapidly growing, and has considerable potential to contribute to consumption reduction, is social marketing…' For this reason, social marketing has been selected to be assessed as a potential tool for investigating the promotion of water efficiency within the tourism industry.

Table 3.1: Marketing Concepts Addressing Environmental Issues.

Authors	**Concept**	**Definition**
Henion & Kinnear (1976)	Green Marketing, Environmental Marketing and Ecological Marketing	Marketing of products that are considered to have less environmental impact than others. Commonly using labels and regulatory schemes to display lower impact.
Kardash (1976)	Ecologically Concerned Consumer	Identifying that some consumers are more likely than others to buy and/or support products with less environmental impacts.
Fisk (1973)	Theory of Responsible Consumption	Examining the concept of reducing and changing consumer consumption.
Elkington & Hailes (1988)	Green Consumers Guide	One example of many guides created to aid consumers in selecting products with less environmental impact.
Prothero (1990)	Societal Marketing	Marketing activities which account for the welfare of society.
Menon & Menon (1997)	Enviropreneurial Marketing	Highlighting the opportunity of mixing the innovation from corporate environmental efforts into marketing.
Fuller (1999)	Sustainable Marketing	Exploring the use of industrial ecology with marketing to transform consumption.

Source: Adapted from Peattie and Peattie (2009).

3.2.1 Wide Range of Opinions

Between its creation in the 1950s and 2010, more than 45 definitions of social marketing have been suggested in the academic literature (Dann, 2010). In synthesising these definitions, Dann (2010) offers social marketing is:

> The adaptation and adoption of commercial marketing activities, institutions and processes as a means to induce behaviour change in a targeted audience on a temporary or permanent basis to achieve a social goal (p. 151).

Despite efforts, little consensus on the key points that define the social marketing process exist, as evidenced by variation within the literature (e.g. French, Blair-Stevens, McVey and Merritt, 2010; Corner and Randall, 2011; Truong and Hall, 2013; Shaw, *et al.*, 2013). Table 3.2 and Table 3.3 define social marketing attributes used in previous research. The common required attributes applied to realize initiatives are highlighted from overlaps in these tables, namely: 1. Define behavioural goal(s); 2. segment the audience; 3. use a marketing mix; 4. consider the importance of the exchange; and, 5. incorporate balance between competing factors for behaviour.

The first attribute is to define the behavioural goal(s). These goal(s) should be explicitly stated and measurable (Andreasen, 2002). McKenzie-Mohr, *et al.* (2012) differentiate between prior behaviours and end-point behaviours. They explain, 'for instance, our principle interest is not in having people purchase high-efficiency showerheads but rather in having them installed' (McKenzie-Mohr, *et al.*, 2012, p.6). Here the purchasing is a prior behaviour and the installation is the end-point behaviour.

Table 3.2 Key Social Marketing Attributes Identified in the Literature.

Benchmarks
Customer or Consumer Placed at the Centre: All interventions are based around and directly respond to the needs and wants of the person, rather than the person having to fit around the needs of the service or intervention. Social marketing seeks to understand 'where the person is now' rather than 'where someone might think they are or should be'.
Clear Behavioural Goals: Social marketing aims to achieve measurable impacts on what people actually do, not just their knowledge, awareness or beliefs about an issue.
Developing 'Insight:' Social marketing is driven by '*actionable insights*' that are able to provide a practical steer for the selection and development of interventions. This means moving beyond demographic or epidemiological data to ask *why* people behave in the way that they do.
'The Exchange:' Social marketing aims to maximize the potential 'offer' of a behavioural intervention, and its value to the audience, while minimizing all the 'costs' of adopting, maintaining or changing a particular behaviour. This involves considering ways to increase incentives and remove barriers to the positive behaviour, while doing the opposite for the negative or problematic behaviour.
'The Competition:' Social marketing uses the concept of 'competition' to examine all the factors that compete for people's attention and willingness or ability to adopt a desired behaviour.
Segmentation: Social marketing uses a 'segmentation' approach that ensures interventions can be tailored to people's different needs. In particular it looks at how different people are responding to an issue, and what motivates them.
The 'Marketing Mix:' Single interventions are generally less effective than multi-interventions, although multi-interventions are more time consuming and effortful. It is important to consider the relative mix between interventions selected.

Source: French, *et al.* (2010) and Corner and Randall (2011). Presented in Shaw, *et al.* (2013, p.55).

Table 3.3: A Further Example of Key Social Marketing Attributes.

Benchmarks	Description
Behaviour Change Goals	Program interventions consider behaviour change as an objective and adopt measures for evaluation.
Audience Research and Segmentation	Interventions are designed based on understanding of audience needs and wants. Formative research is conducted to achieve this target. Intervention elements are pretested. The audience are divided into homogenous segments.
Social Marketing Mix	Interventions attempt to use the set of 4Ps in the traditional marketing mix. This includes product, price, place, and promotion. Interventions that only use the promotion element are social advertising or communications. Other Ps may include people and policy. The use of these elements should be flexible.
Exchange	Something the target audience are interested in or want is offered to motivate behaviour change. It may be tangible (financial incentives, rewards) or intangible (emotional satisfaction, community pride).
Upstream Targeting	Program interventions seek to influence other people relating to the target audience (e.g. local authorities, professional organizations, policy makers).
Competition	Competing behaviours are considered by program interventions. They include internal (e.g., the target audience's current behaviour) and/or external factors (e.g., weak policies). Strategies are used to eliminate or minimize these factors.

Source: Adapted from Andreasen (2002), McDermott, Stead and Hastings (2005) and Stead, *et al.*, (2007). Presented in Truong and Hall (2013, p.115).

McKenzie-Mohr, *et al.* (2012) also offer that the end-point behaviour should be selected based on three questions: How impactful is it; how many people are not doing it; and, how probable are those not doing it to start? These three questions can enable a social marketer to select behaviours that are most able to be changed by a campaign. Ultimately, the success of a campaign is measured by actual behaviour change and not only knowledge gain or shift in thinking, as Andreasen (2002) states 'behaviour-change is the benchmark used to design and evaluate interventions' (p.7).

The second key point is to segment the audience. This has been done through stratifying the audience by rudimentary means or more sophisticated efforts such as cluster analysis (Dolnicar, 2004). Resources are considered scarce and thus targeting the right audience segment with available resources is of high priority (Andreasen, 2002; Grier and Bryant, 2005). Chhabra (2009) reported, 'regardless of the segmentation approach, the entire process of identifying target markets is aimed to inform and guide appropriate communication strategies so that effective messages can be designed and communicated' (p.306). This ensures a product is created for a specific segment, which is in contrast to creating a product and then marketing it. Andreasen and Kotler (2007) identify this by differentiating the 'target marketing' approach (used in social marketing) from 'mass marketing' (which develops one product and attempts to attract as many consumers as possible) and 'product-differentiated marketing' (which creates products to offer something for every type of consumer).

The marketing mix are elements of the outcome, or intervention, available to the marketer. The term 'marketing mix' was coined by Neil Borden in his 1953 American Marketing Association presidential address (Borden,

1964; Gordon, 2012). Borden (1964) noted that marketers used a mix of methods much like a cook creating food where the recipe could be scripted by the cook (marketer) or by someone else (i.e. fellow marketer or firm). McCarthy (1960) was responsible for later introducing the marketing mix ingredients as the four P's (price, product, place and promotion). Today, while some have argued the four Ps are outdated (Peattie and Peattie, 2003; Gordon, 2012) the four Ps concept is dominantly used in classic marketing (Grönroos, 1994) and social marketing efforts (Hasting, 2007).

The next attribute is considering the importance of the exchange which aims to maximize return for the targeted audience segment (French, *et al.*, 2010). Said another way, social marketers need to understand and consider the barriers and drivers to the behaviour. They then consider how to maximize the drivers and minimize the barriers. This can be viewed as minimizing the 'price' of the 'product' (French, *et al.*, 2010; Corner and Randall, 2011). Ultimately the marketer offers to exchange something tangible (e.g. financial incentives, products) or intangible (e.g. emotional satisfaction, community pride, social recognition) for change of the behaviour by the targeted audience (Truong and Hall, 2013).

Finally, incorporating balance between competing factors for behaviour ensures the consideration of the target segments' barriers and drivers to change. McKenzie-Mohr, *et al.* (2012) offer the example of carpool lanes. Carpool lanes simultaneously promote carpooling while discouraging (less lanes for none car-poolers) driving alone. This example highlights that it is possible, and McKenzie-Mohr, *et al.* (2012) would argue necessary, to both promote one behaviour while discouraging the competing behaviour. While a

wide range of definitions have been presented for social marketing, these five key points are identified as the foundation to social marketing.

3.2.2 Mapping the Process

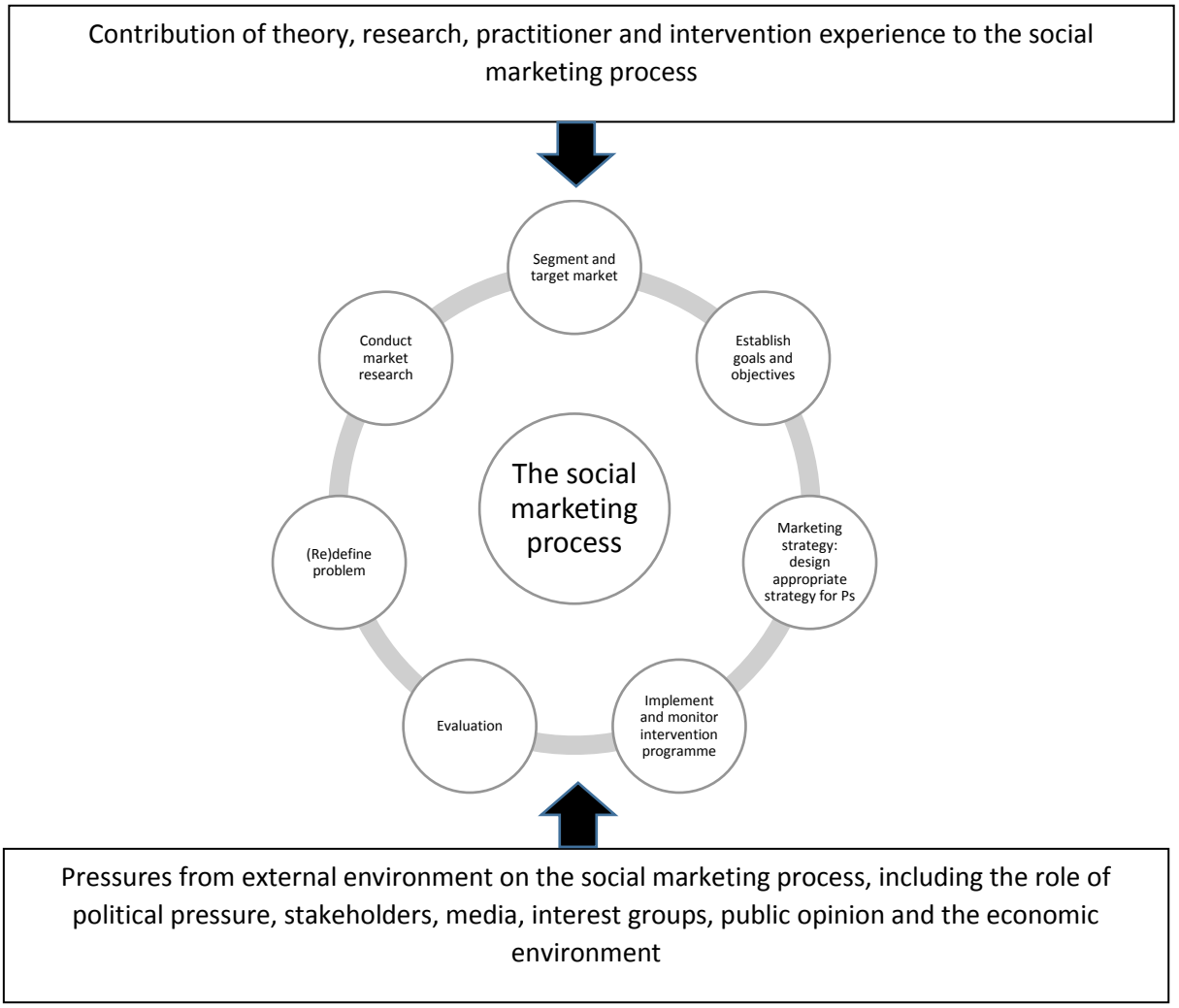
In figure 3.1, Hall (2014) synthesise the work of several authors to explain the social marketing process. Many of the stages identified by Hall (2014) have been previously explained previous. However, of importance is the additional stage of evaluating outcomes. Shepard, *et al.*, (2009) and Luca and Suggs (2013) have made urgent appeals for following and reporting established theory. This has been accompanied by Hall (2014) and French, *et al*., *(*2010) urging better evaluations of campaign success.

To address issues of evaluation, Leavy, Bull, Rosenburg and Bauman (2011) recommend five steps for a social marketing campaign: 1. The evaluation should be designed alongside and embedded in the theories and frameworks used to form other campaign content; 2. the process should have multiple stages of data collection; 3. it should endure for an appropriate duration; 4. measurement instruments should be used that have been validated through previous use; and, 5. sufficient resources to compete the evaluation process should be available.

Another important contribution from Hall's (2014) diagram is the acknowledgment that external pressures contribute to the social marketing process. Pressures include political pressure, stakeholders, media, interest groups, public opinion and the economic environment. While contributions to the process are from both practitioners and researchers. Together these

outside forces demonstrate that social marketing campaigns are not closed processes, instead representing dynamic practices (Hall, 2014).

Figure 3.1: A Synthesis of the Literature Defining the Social Marketing Process



Source: Hall (2014, p. 77).

3.2.3 Commonly Used Strategies

While the five attributes represent some level of agreement in the field of social marketing, the use of strategies and theory show less continuity within the literature (Luca and Suggs, 2012). In one study, 33 psychological theories of behaviour and over 130 theoretical constructs were identified for use in such

efforts (Michie, *et al.*, 2005). This great diversity in theories may explain the lack of continuity in the literature. This section aims to describe some of these theories, however due to the many examples, only those most relevant (i.e. targeting water or the environment) to the current research will be reviewed.

For McKenzie-Mohr, *et al*. (2012) social marketing campaigns have commonly used strategies to promote the desired behaviour. These strategies include: commitments; prompts; norms; social diffusion; goods and services (product); communication (promotion); incentives/disincentives (price); and, convenience (place). Each strategy is supported by theories and models. Understanding the theories and models that drive behaviour is vital to the success of a social marketing campaign (Shepard, *et al.*, 2009; Luca and Suggs, 2013). Using the framework identified by McKenzie-Mohr, *et al.*, (2012), Table 3.4 outlines some of the common theories used by social marketers identified within the academic literature. This list is not exhaustive of current efforts and is instead presented as examples of theories and practices potentially relevant to the current research.

In this context, the strategy of commitments ask the target audience to pledge they will follow through with a desired behaviour. Examples may include wearing a button, verbally pledging or signing a petition to act or think in a desired way (Baca-Motes, *et al.*, 2013). The next strategies are prompts which are indicators that remind an individual to behave in a desired manner. They may use any of the senses and most commonly are audio or visual. Examples include, test messages to take medication, signs next to the light switch reminding someone to turn off the lights prior to leaving the room or sounds on a shower head indicating when an ‘average’ shower time has been surpassed (McKenzie-Mohr, *et al.*, 2012).

The strategy of norms, aims to create an environment where individuals believe they should behave within what they term as normal at a given time and place (Goldstein, *et al.*, 2008). Next, social diffusion (another term for descriptive norms) is the concept that behaviours are frequently adopted because of the actions and desires of people close to us (friends, colleagues or family). As was explored in the section on towel reuse schemes, in Chapter Two, there are different types of norms to consider for implementation and some have been shown to be more effective than others (Goldstein, *et al.*, 2008; Shultz, *et al.*, 2008; Reese, *et al.*, 2014).

Goods and services are part of the 'product' in the marketing mix. Products may include water efficient shower heads while services may include water audits (Tiefenbeck, *et al.*, 2013). Next, communication strategies aim to promote behaviour through messaging. For example, personal communication versus mass communication and which communication channels to select for a given audience (Hall, 2014). Shock advertising, communication meant to upset the target audience to create an emotional response toward a goal, has been shown to be effective in some efforts (Dahl, Frankenberger and Manchanda, 2003).

Incentives/disincentives as a strategy aim to promote or punish behaviours with tangible (financial, products, regulations or services) reinforcement. Taxes, give-aways and rebates are examples of this strategy (Thaler and Sunstein, 2010). Finally, convenience is concerned with where and how behavioural options are presented to the individual. Specifically, it commonly aims to reduce barriers to actions or create barriers to undesired behaviours. Examples may include, curb-side recycling pick-up and geographically convenient oil collection points (McKenzie-Mohr, *et al.*, 2012).

Table 3.4: Selected Example of Strategies and Theories used in Social Marketing.

Strategy	Theory	Citation(s)
Commitments	Make them public, not private.	Pallak, Cook & Sullivan (1980); Baca-Motes, *et al.* (2013)
	Target groups with strong ties (i.e. church or community groups) can increase participation rates.	Wang & Katzev (1990)
	Involving individuals in the process at all levels can increase participation.	Gonzales, Aronson & Costanzo, (1988); Shaw, *et al.* (2014)
	Help people see themselves as environmentally concerned (i.e. comment on their past actions).	McKenzie-Mohr (2011)
Prompts	Providing visual (i.e. flashing lights, texts, emails or written) or audio signals can change behaviour.	Tiefenbeck, Tasic, Staake & Fleisch (2013)
Norms	When beliefs and behaviours clash (known as cognitive dissonance) people are more likely to change their beliefs then their behaviour.	Festinger (1957)
	Making norms highly localized can increase impact.	Goldstein, *et al.* (2008)
	Role modelling desired behaviour can promote the desired results through 'crowding-in effect'.	Steg & Vlek (2009); Gössling, *et al.* (2015)
Social Diffusion	Group loyalties and identification spur individuals to behave like others with which we identify, known as 'inter-group bias.'	Tajfel, *et al.* (1986)
	People are strongly influenced by and value themselves based on how their social network values them called social capital theory.	Coleman (1988)
	Individuals view behaviour as acceptable in a given situation to the degree they see others exerting that behaviour.	Cialdini (2001); Shang, *et al.* (2010)
Goods and Services	Large portions of resource savings can be realized with infrastructural and behavioural changes.	McKenzie-Mohr, *et al.* (2012)
Communication	Personalizing messages can increase effectiveness.	Keller, *et al.* (2012)
	Shock advertising to solicit a reaction and be noticed.	Dahl, *et al.* (2003)
	Promote during and through special events.	Bell & Blakey (2010)
Incentives/Disincentives	Incentives can lead to lower participation over time as opposed to intangible awards. This is known as 'motivation crowding' theory.	Frey & Jegen (2001)
	People are more influenced by losing then gaining something. This is known as loss aversion.	Kahneman & Tversky (1979)
Convenience	Defaulting to the low environmental impact increases participation.	Thaler & Sunstein (2010)
	Removing barriers can increase participation.	Miller, *et al.* (2014)

Source: Adapted from McKenzie-Mohr, *et al.* (2012).

3.2.4 Epistemology in Social Marketing

Which strategies and related theories to choose may be influenced by the epistemology of the researcher or practitioner (Hall, 2014). The previously reviewed debate between Shove (2010) and Whitmarsh, *et al.* (2010) is exemplified in three broadly defined types of social marketers. The first are 'traditionalists' whom promote 'intentionally or unintentionally, the transfer of traditional marketing tools, the same ones that have tended to be employed in commercial settings, to the social marketing arena… employing a rational economic model of behaviour' (Glenane-Antoniadis, *et al.*, 2003, p.329). The second are 'convergents' whom argue for an 'interdisciplinary approach to the study of social marketing and use of other tools that go beyond the traditional notions' (Glenane-Antoniadis, *et al.*, 2003, p.329). The third are described as 'anti-consumption' (also known as 'systems thinkers') whom embrace interdisciplinary collaboration and use of unconventional tools similar to 'convergents' but also seek to frame consumption practices within the social, economic and political boundaries in which they operate (Donovan and Healey, 2003; Hall, 2013). The 'traditionalists' are aligned with the more positivist views of Whitmarsh, *et al.* (2010), that actions can be quantified and individual decisions are the issue affecting environmental impacts. Similarly, 'systems thinkers' are more aligned with the more constructivist view of Shove (2010), believing notions of larger institutional and systemic issues are the cause of environmental degradation and changes to these systems need to be targeted. If viewed on a continuum, the 'convergents' could be placed somewhere in between. Hall (2013) identifies that these three groups focus social marketing efforts at different audiences. 'Traditionalists' and 'convergents' tend to focus on eliciting change in the target audience (Hall, 2013; 2014). While 'systems

thinkers' aim to also affect the institutions and organizations that affect behaviour (Andreasen, 2006; Hall, 2013; 2014).

A similar framework for understanding the audience has also been described in the literature. To better differentiate who is targeted within a social marketing effort the metaphor of a river has been used where initiatives and stakeholders have been considered upstream, midstream or downstream (Hastings, 2007). For Andreasen (2012), downstream targeting focuses on individuals' with a 'problem behaviour.' Lee and Kotler (2011), describe midstream interventions as targeting those individuals close to and directly affecting the individuals whom perform the 'problem behaviour.' They offer the example of teaching parents or midwives the most effective ways to interact with teens about the importance of HIV/AIDS testing. Russell-Bennett, Wood and Previte (2013) add that midstream also includes stakeholders within the community in which individuals live and interact.

For Niblett (2005), upstream 'addresses how we change the policies, laws, regulations, and physical environments that can marginalize or render worthless our best efforts at getting individuals to change their behaviour if there are too many marketplace or environmental barriers' (p.14). Andreasen (2012) adds upstream efforts aim to engage the peripheral stakeholders affecting those behaviours (e.g. government, media and corporate partners). This delineation between audiences highlights that social marketing campaigns can involve many stakeholders and viable opportunities to change a target behaviour are rarely limited to solely targeting downstream, midstream or upstream. To this point, Hall (2013) argues that an effective social marketing campaign incorporates downstream, midstream and upstream thinking.

3.2.5 Contemporary Issues in Social Marketing

As a concept, social marketing has evolved since its creation as outlined previously. One significant contemporary change is the call for shifting away from traditional marketing theory (Peattie and Peattie, 2003; 2009). Classical marketing theory is embedded in the idea of exchange theory where customer satisfaction is 'exchanged' for profit (Webster, 1992; Day and Montgomery, 1999; Parvatiyar, 2000). Exchange theory has three main premises: Two or more parties make an exchange; the parties value something the others have; and, each party is willing to exchange (Peattie and Peattie, 2003). This view of exchange theory has been challenged by the development of service dominate logic. For Vargo and Lusch (2004), service dominate logic recognizes that value in purchased products is in the service it provides to the customer and not just the physical product. Goods and services are not separate but instead viewed as part of the same value proposition. This view has led to the concept of co-creation where customers and producers determine value through the service a product provides (Chathoth, *et al.*, 2014). Customers are therefore engaged at all levels of value proposition and market transaction. Co-creation of value with customers relies on the belief that customers are not passive but active members in creating products and services (Desai, 2009).

While some have called for an increase in co-creation (Dann, *et al.*, 2007), defining the actual process in tourism accommodation is poorly understood (Chathoth, *et al.*, 2013). Chathoth, *et al.* (2013) identify co-creation in the hotel industry as 'the joint production of value creation through which customers are intensely engaged in every stage of the value creation process' (p.11). This concept is explained by comparing it to co-production. Co-production has been defined by Prahalad and Ramaswamy (2004) as the

exchange of goods and services between firms and customers built on the premise of concurrent production and consumption where the firm's value creation treats the customer as passive. However, Chathoth, *et al.* (2013) identify that in practice the difference between co-production and co-creation is not measurable by a set of protocol nor a dichotomy and instead co-creation is determined on a continuum by the amount of involvement and type of dialogue in which the customers' participate. In this continuum, co-production is on one side (little interaction with customers) and co-creation on the other (maximum interaction with customers). One important differentiation of co-production and co-creation is that co-creation with customers occurs at the point of innovation of the services whereas customization and co-production occur at the point of consumption (Kristensson, Matthing and Johansson, 2008; Lusch, Vargo and O'Brien, 2007; Michel, Brown and Gallan, 2008). Therefore, varying amounts of co-creation may be possible at the point of innovation with both great and limited amounts of customer interaction in the value proposition process. Desai (2009) identifies the key points necessary for co-creation in social marketing campaigns as reciprocity, interdependence, trust and commitment between multiple stakeholders. Accordingly, to increase participation, the customer or target audience must have the opportunity to voice their opinion, listen to the campaign organizer and feel the effort is in their best interest.

This continuum of co-creation and highlighted key points are exemplified in the social marketing campaign 'MyVERB recorder' (Desai, 2009). In this campaign children aged 9-13 were encouraged to connect with friends through physical activity (Huhman, 2008). Kids found places near their homes to be active and created games with a game generator to co-create 'products.' They then recorded their activity on the campaign website and earned rewards.

VERB Yellowball incorporated yellow play balls that recorded activity and were distributed around the United States. Teens played with the balls in the games they created and then gave them to another teen and blogged about their experiences (Huhman, 2008). The campaign involved areas of co-creation and other areas of co-production (e.g. the Yellowball; campaign website, etc.). This campaign demonstrated that co-creation can occur through varying amounts of involvement and dialogue (in this case mostly online). It also exemplified that co-creation can occur between the firm and social marketer; between the firm and customers; and, between customers and customers.

Another concept evolving in the human behaviour literature is the capacity to change behaviour. This concept was explained by Whitmarsh, *et al.* (2009) in their idea that carbon literacy (understanding what people know about their impacts) is not sufficient to change and quantify behaviour. Instead a call for understanding carbon capacity (the ability to alter carbon production) is needed. Hall (2013) introduced this concept to the social marketing literature and proposed that capacity is defined by the three dimensions of decision-making and cognition of actors; individual behaviours and social practices; and, broader engagement with systems of provision and governance. The concept of 'capable' has been used by other researchers in understanding water behaviour (e.g. CCWATER, 2006; DEFRA, 2009; UKWIR, 2014). An individuals' water capability is their ability to reduce water use, within the three dimensions identified by Hall (2013).

3.3 Social Marketing in Tourism Studies

While social marketing was conceptualized in 1952, it was not used in the academic tourism literature until Bright (2000) argued that it could inform the public of the beneficial gains of tourism to improve societal quality of life (Shaw, *et al.*, 2013). However, it may have been used previously in practice yet unidentified as such. For example, Troung and Hall (2013) assessed forty-five tourism projects in Vietnam to identify the use of social marketing (using the criteria from Table 3.2). They found twenty-one projects matched all benchmarks while others meet some but not all attributes. Most importantly, no projects used the term social marketing or referred to its use (Troung and Hall, 2013). This may also be the case for research within the academic literature where some research meets social marketing attributes but are not identify as such. Thus, the limitation of including all relevant studies that fall under the umbrella of social marketing and the subjective inclusion of others is acknowledged. While these limitations exist, Table 3.5 identifies 25 tourism citations with reference to social marketing to better understand trends within the field. These citations were compiled by searching the web browser Scopus (2015), Google Scholar (2014), and EBSCO Host and Business Direct search engines using the terms ‘social marketing’ and ‘tourism’ and citations that have been identified as social marketing efforts within other academic literature. This analysis identifies five general themes within the tourism social marketing literature: General Information; Tourist Behaviour; Domestic Versus Tourists Behaviour; Investigating Existing Marketing Messages, and; Manager Behaviour.

Table 3.5 Search of Literature Containing Relevant Terms.

Literature (Method*)	Summary	Theme
Bright, 2000 (LR)	Review and application to promoting social welfare and healthy lifestyles through tourism	General
Gössling, *et al.*, 2015 (LR)	Extensive review of tourism and water with sections on the use of social marketing	General
Hall, 2014 (LR)	Extensive review of social marketing use in tourism	General
Kaczynski, 2008 (LR)	Defines marketing options for the tourism industry	General
Shaw, *et al.*, 2013 (QM)	Use of co-creation in defining social marketing effort to increase public transportation for tourism	General
Truong & Hall, 2013 (OB)	Review of use of social marketing by tourism NGOs in Vietnam	General
McKenzie-Mohr, *et al.*, 2012 (LR)	Examples of social marketing in environmental efforts including water use in tourism accommodation including O'Neill, Siegelbaum and THE RICE GROUP (2002)	General; Management Behaviour
Beeton, 2001 (LR)	De-marketing ideas for gambling holidays	Tourist Behaviour
Beeton & Benfield, 2002 (LR)	De-marketing in National Parks to move use away from sensitive areas	
Wearing, Archer & Beeton, 2007 (LR)	Developing targeted marketing messages in National Parks	
Beeton & Pinge, 2003 (LR)	De-marketing gambling to promote local tourism	
Dinan & Sargeant, 2000 (QS)	Identifying messaging to promote more sustainable tourism behaviour	
Shang, *et al.*, 2010 (QS)	Measuring intentional behaviour and customer loyalty from hotel donations derived from towel reuse schemes	
Barr, *et al.*, 2010 (QS, QM)	Segmentation of audience to measure green attitudes and behaviours towards cheap airline travel	
Kim, Borges & Chon, 2006 (QS)	Identifying segments and potential marketing messages at an environmental film festival	
Miller, *et al.*, 2011 (QS)	Identifying a lack awareness of tourists' impacts on the environment and unwillingness to make behavioural changes by the English public	
Wooler, 2014 (QS, QM)	Using social marketing to understand and encourage sustainable tourism behaviour in South West England	
Barr, *et al.*, 2011a (QM)	Identifying lifestyle segmentation as too static for the behavioural discrepancies from home and on holiday	Domestic Versus Tourist Behaviour
Barr, *et al.*, 2011b (QM)	Use of interviews to identify discrepancies in tourist behaviour from home and on holiday	
Barr, *et al.*, 2011c (QS, QM)	Find that those that claim to be most environmental also fly the furthest and most frequent for holiday	
Miller, *et al.*, 2014 (QS)	Identifying barriers and drivers for urban tourist to behave sustainably on holiday in Melbourne Australia	
Chhabra, *et al.*, 2011 (OB, QM)	Identifying gender inequality in tourism advertisements in the USA four corners region	Investigating Existing Marketing
Sirakaya & Somez, 2000 (OB, QM)	Use of photographs in tourism brochures to identify gender inequality in marketing	
Armstrong & Kern, 2011 (CS)	The use of de-marketing to manage visitors in Blue Mountains National Park, Australia	
George & Frey, 2010 (QS, QM)	Identifying messaging to encourage sustainable practices by hotel managers in South Africa	Management Behaviour

*__LR,__ literature review; **OB**, observation; **QM**, qualitative methods; **QS**, questionnaire-based survey; **CS**, case study methods.

Source: Author.

Literature that highlighted ‘general information’ focused on a review of social marketing, case study examples and how social marketing was applied to tourism studies (Gössling, *et al.*, 2015; Hall, 2014; Shaw, *et al.*, 2013; Truong and Hall, 2013; Kaczynski, 2008; Bright, 2000). Analysis of methods used in these papers commonly relied on literature reviews. Alternatively, work focusing on ‘tourist behaviour’ concentrated on messages to change behaviour towards environmental or socially positive outcomes (Dinan and Sargeant, 2000; Shang, *et al.*, 2010; Kim, Borges and Chon, 2006; Wooler, 2014), de-marketing demand for a given negative behaviour (Beeton, 2001; Beeton and Benfield, 2002; Wearing, Archer and Beeton, 2007; Beeton and Pinge, 2003;) or identify barriers and drivers for changing behaviour (Barr, *et al.*, 2010; Miller, *et al.*, 2010). This literature applied a mix of literature reviews, quantitative questionnaires and qualitative interviews.

Literature focusing on ‘domestic versus tourist behaviour’ discussed aspects of social marketing exploring the differences in actions between individuals at home and whilst on holiday to understand barriers and drivers and potential messaging (Barr, *et al.*, 2011b; 2011c; Miller, *et al.*, 2014). This research has relied on quantitative questionnaires and qualitative interviews (both in some instances). In contrast, literature aiming to ‘investigating existing marketing messages’ reviewed previous efforts in marketing to understand biases or inabilities to accomplish goals of equality and sustainability (Chhabra, *et al.*, 2011; Sirakaya and Somez, 2000; Armstrong and Kern, 2011). Uniquely, this literature heavily relied on observation and qualitative measurements. And finally, literature focusing on ‘manager behaviour’ applied social marketing to better understand tourism managers’ motivations, as opposed to tourists, to promote environmental efforts in their operations (George and Frey, 2010;

McKenzie-Mohr, *et al.*, 2012). The use of literature reviews, quantitative questionnaires and qualitative interviews was common in this literature. Additionally, work by O'Neill, *et al.* (2002) was highlighted in McKenzie-Mohr, *et al.* (2012) and was therefore included as part of this citation.

3.4 Promoting Water Efficiency in Tourism Accommodation

Gössling, *et al.* (2015) reported a lack of application of social marketing to water reduction in tourism accommodation. Only two such efforts could be identified within the literature. McKenzie-Mohr, *et al.* (2012) recognised the 1999 effort by Seattle Public Utilities (lead by researchers Philip Paschke, Roger, E. Van Gelder and Heidi Siegelbaum) to increase hotel efforts to reduce water use as an example of social marketing. Efforts began by first administering a questionnaires to hotels in the Seattle area. Findings were then applied to two hotels, used as case studies, to identify potential interventions for increasing water efficiency. At one hotel it was determined that 90% of projected water savings would be achieved through equipment upgrades to restrooms, ice machines and laundry equipment. At the other hotel it was determined that 90% of projected water savings would be achieved through behavioural measures such as maintenance and operation of heating, cooling equipment and guest behaviour. However, distinctly missing from this example is the guest perspective on each initiative. Additionally, the research engaged only larger hotels and not smaller operations.

Shang, *et al.* (2010) reported how they used social marketing to understand how guests may perceive towel and linen reuse schemes (as reviewed in Chapter Two). However, it is important to highlight that the study

does not segment the target audience, calling into question whether it is truly an application of social marketing, as it claimed. Importantly, the study focused solely on the guest experience, not including the accommodation managers in the research process. Another distinction is the study focused only on reuse schemes and not general water use behaviour. With Shultz, *et al.* (2008) identify that these types of behaviours may be distinctly different, findings may be limited to only reuse schemes and not general behaviours (e.g. taps and shower).

Efforts by Shang, *et al.* (2010) and those identified in McKenzie-Mohr, *et al.* (2012) represent several gaps in knowledge for understanding the nature and application of social marketing to promote water in tourism accommodation. Specifically, there has been a distinct lack of multi-stakeholder engagement. This is especially surprising as Shaw, *et al.* (2013) identify collaboration between multiple-stakeholders is vital to the social marketing process. Additionally, the use of social marketing for this purpose has not been investigated for the application of changing guests' broader behaviours (e.g. taps, showers, management decisions, etc.). Therefore opportunities exist to better identify novel aspects in which social marketing may be applied to tourism accommodation to promote water efficiency.

3.5 Critiques of Social Marketing

While social marketing appears to be a promising tool for reducing consumption, it is not without heavy criticism. There are both theoretical concerns (definitions and terminology, ethics of changing behaviour and being embedded in exchange theory) and practical concerns (discrepancies in self-

reporting, reaching the ‘right’ segments, and lack of evidence). Following is an examination of these critiques.

3.5.1 Definitions and Terminology

A commonly cited criticism is linked to defining the term social marketing (Andreasen, 2002; McDermott, Stead and Hastings, 2005; Stead, *et al*., 2007; Shaw, *et al.*, 2013). This was first highlighted by Luck (1974) whom argued that social marketing would struggle to become a discipline until it was well defined. This is most evident in Dann’s (2010) work, previously discussed, finding over 45 definitions of social marketing in the academic literature. The lack of a solid definition has led to misunderstandings in terminologies. According to Andreasen (2002) there were misunderstandings over the terminology of this practice in the 1960s and 1970s. He cites terms such as ‘not for profit marketing’ and ‘responsible marketing’ as pseudonyms that have been used in the past to describe the same practice. Furthermore, Truong and Hall (2013) suggested this type of confusion may lead to their findings that social marketing was being used in tourism efforts but not explicitly identified as such.

3.5.2 Ethics of Changing Behaviour

It is important to recognize ethical concerns when considering changing behaviour. Laczinak, Lusch and Murphy (1979) found that social marketing can represent one group of people imposing their morals on another. They identified the contentious issue of family planning where no one answer will

appease competing factions and each side may believe they are campaigning for the social good (freedom of choice and pro-life).

Another ethical criticism is that social marketing could be viewed as social profiteering where many social marketing campaigns have been linked to profits by private or government agencies (Fox and Kotler, 1980). For example, seat belt manufacturers were among the greatest lobbyist for mandatory seat belt laws in the US and health/life insurance companies have advocated for more health conscious messaging in hope of increasing profits (Fox and Kotler, 1980).

3.5.3 Embedded in Exchange Theory

As previously discussed, another concern is due to social marketing being embedded in classic marketing (Peattie and Peattie, 2003; 2009). One criticism is that the negative connotations of classic marketing may affect audience trust towards social marketing campaigns (Fox and Kotler, 1980). Another critique is the relevance and ability for exchange theory to sufficiently express the complex structure of a social marketing campaign with the four P's: Price, product, promotion and place.

For example, 'product' may be a limited concept in social marketing as Peattie and Peattie (2009) identified the product may be less tangible and the product may not be created by the campaign. Similarly, Bloom and Noveli (1981) recommended that the conventional idea of 'price' is commonly missing from social marketing and that it may be associated with the effort and opportunity costs associated with a behavioural change. Additionally, in social marketing campaigns, price is considered to a greater extent by the marketer,

which is opposite of exchange theory, who is attempting to minimize the cost of changing the behaviour (Gordon, 2012). Therefore, considering who is funding the campaign and how much funding is available is perhaps of greater importance. The difficulty of defining product and price within the context of social marketing highlights limitations to the use of exchange theory and the need to move toward service dominate logic.

3.5.4 Discrepancies in Self-Reporting

Discrepancy between what target audiences may report and their actual behaviour has been well documented (e.g. Austin, *et al.*, 1998; Wilcox, 2005). These discrepancies may be elevated when the beliefs and behaviours being studied are difficult social issues for the audience (Fox and Kotler, 1980). This is of particular concern in social marketing campaigns which navigate difficult issues such as, though not limited to, rape prevention, drug use, teen pregnancy and responsibility for environmental degradation (Bloom and Novelli, 1980; Fox and Kotler, 1980). Inaccurate data of this kind can lead to difficulties in segmenting the audience (Wooler, 2014). Segmenting the audience in social marketing campaigns is critical to targeting the right individuals with the right interventions. Therefore, social marketing may be limited by the well documented limitations of self-reporting to a greater extent than other fields of study.

3.5.5 Reaching the 'Right' Segments

Those groups with the 'riskiest' or least 'socially desirable' behaviours may also be comprised of individuals that do not want, nor are willing, to exchange for changes in their behaviour. Bloom and Novelli (1980) identified this issue with several examples, including dangerous drivers avoiding the use of seat belts and the most sexually active teenagers avoiding contraceptives. Specific to environmental behaviour, in the DEFRA (2009) report, this segment was referred to as the 'honestly disengaged' while the UKWIR (2014) report identified them as 'disengaged.' These groups are the most in 'need' of intervention and yet they are the least likely to make an exchange for changing their behaviour. When resources are scarce there are trade-offs to investing in these less engaged groups and therefore those most in need may be marginalized.

3.5.6 Lack of Evidence

Critics identify a lack of evidence through both under reporting of theory applied to the social marketing campaign and few reported measurements of campaign outcomes. Shepard, *et al*. (2009) reported 'theory has seldom been used explicitly to guide intervention development' (p.2). This was supported by Luca and Suggs (2013) whom found a lack of evidence that social marketing campaigns use established theory. They wrote, 'evidence on the use of theories and models in social marketing interventions is sparse….an ongoing lack of use or underreporting of the use of theory in social marketing campaigns and has reinforced the call to action for applying and reporting theory to guide and evaluate interventions' (p.20). This also appears to be true in the

evaluation process where Truong and Hall (2013) found evaluation to be lacking in social marketing examples. They contended that even in those examples evaluating success, they often occur just once, providing little evidence of change over longer periods of time.

3.5.7 Addressing Critiques

These criticisms can be divided into two main themes: theoretical and practical concerns. Many of the theoretical concerns are linked to the discipline of social marketing evolving from classic marketing theory, embedded in exchange theory. A move towards social marketing identifying itself as a separate discipline may alleviate these concerns (Peattie and Peattie, 2003). For example, when social marketing is embedded in service dominate logic and co-creation the audience has a voice in the process of behaviour change and therefore there is less chance of one group forcing its' beliefs on another (Shaw, *et al.*, 2013). Practical concerns also exist, such as reaching the right segments and a lack of evidence. These concerns need to be considered when creating and implementing the methods of this study to minimize their potential negative effects. The following methods chapter will aim to address some of these concerns.

3.6 Chapter Summary

The term social marketing has many definitions; this thesis relies upon the work of Dann (2010), describing it as the application of marketing efforts to change behaviour for a social goal. While varying attributes to social marketing

campaigns have been identified, this review has synthesised the commonalities as defining behavioural goal(s); segmenting the audience; using a marketing mix; considering the importance of the exchange; and, incorporating balance between competing factors for behaviour.

Social marketing has evolved over time from being embedded in exchange theory to being a tool informed by service dominate logic and co-creation. This shift has enabled social marketers to co-create solutions to behaviour change, where co-creation and co-production are not viewed as dichotomous but instead on a continuum.

The social marketing process has been identified as being applied to promoting water efficiency in the tourism accommodation in a limited number of studies. Additionally, the novel opportunity to apply a multi-stakeholder effort within the same research exists. The application of social marketing to many different guests behaviours and attitudes (e.g. towel reuse, showers, management practices, etc.) within the same study is also identified as a current gap in the literature.

While social marketing has increasingly become popular in academia in recent years (Troung, Gary and Hall, 2014), it is not without criticism. Many of these issues are due to the discipline being linked to classic marketing being embedded in exchange theory. The evolution of social marketing towards co-creation and service dominate logic may reduce many of these concerns. Other practical criticism exist and need to be acknowledged to move the field forward. These practical concerns will be integrated into the following methods section. Reviewing previous literature with terms ‘social marketing’ and ‘tourism’ revealed several distinct categories of research. Each category relied on the

application of different methodologies. Such applications will be reviewed in greater depth in the following section. Developed through this review, this research used a uniquely comprised mixed methods approach informed through previous efforts.

Chapter Four- Methodology

4.1 Introduction

The purpose of this chapter is to outline the methods used in this research. First, the philosophical research approach will be presented to orient the reader. Next, a description of pertinent information concerning the sample area is provided. The sample, survey instrument, data collection and data analysis of each of the four stages, explained previously in Figure 1.3, will be reviewed. A justification for each stage is provided and limitations to the data are presented. The chapter will conclude by discussing the reliability and ethical issues concerning the collection and storage of said data.

The four stages of the methods represented a linear progression of information, culminating in a Delphi consultation. The project's aim, objectives and research questions also progressed in a compounding manner. Table 4.1 represents the connection between each stage of the methods and the project objectives and research questions. In general, the focus groups and semi-structured interviews informed Objective One. The guest questionnaires informed Objective Two and Three. And the combination of all four stages were used to address Objective Four.

Table 4.1: Primary Method(s) used to inform the Project Objectives and Research Questions.

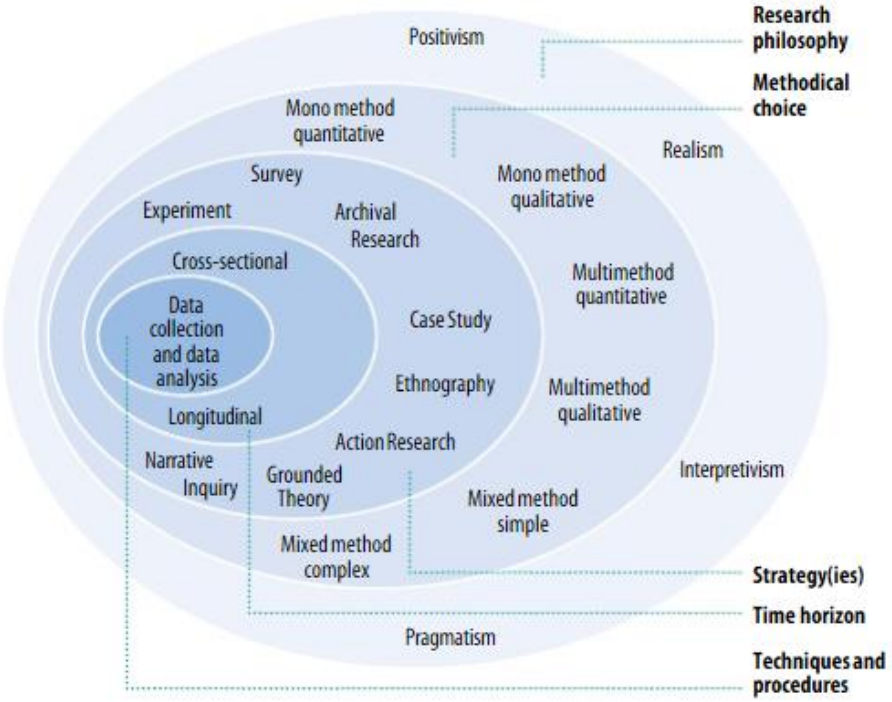
Aim	Objectives	Research Questions	Primary Method
Critically appraise the nature and application of social marketing to promote water efficiency within tourism accommodation	**1.** Investigate how tourism accommodation businesses manage water	**1.1** To what extent do accommodation managers value water in the success of their business?	Manager focus groups
		1.2 What are the barriers and drivers for managers to implement water efficient initiatives?	Manager focus groups
		1.3 How are initiatives aimed at changing guest behaviour perceived by accommodation managers?	Manager semi-structured interviews
		1.4 Do managers have new ideas or current practices not previously tested in the literature?	Manager semi-structured interviews
	2. Examine behaviour among groups of water users	**2.1** What water use behaviours are exhibited in the home?	Guest questionnaire
		2.2 What water use behaviours and attitudes are exhibited by guests in tourism accommodation?	Guest questionnaire
		2.3 Are there differences between water use behaviours at home and in tourism accommodation?	Guest questionnaire
		2.4 How can guests be described based on segmenting them by their water behaviours?	Guest questionnaire
	3. Describe potential efforts to change water behaviour in tourism accommodation	**3.1** How do potential initiatives impact the guest experience of water user segments within the tourism accommodation?	Guest questionnaire
		3.2 How do potential messages impact the behaviour of water user segments within the tourism accommodation?	Guest questionnaire
		3.3 Where are messages best physically positioned to reach guests?	Guest questionnaire
		3.4 What potential initiatives exist, discovered through the process of social marketing with both managers and guests, to reduce water use within the tourism accommodation?	Delphi consultation
	4. Assess the effectiveness of potential social marketing initiatives to encourage water reduction in the tourism accommodation industry	**4.1** How is the effectiveness of potential initiatives assessed by experts?	Delphi consultation
		4.2 Is there continuity in accessing potential initiatives between each stage of this research?	Delphi consultation
		4.3 Who is best positioned to implement initiatives?	Delphi consultation
		4.4 What implications do results of this research have for the field of social marketing?	Delphi consultation

Source: Author.

4.2 Research Approach

This section will explain how the research process was structured through the concept of the research onion developed by Saunders and Tosey (2012) as seen in Figure 4.1. The research onion is divided into five layers: research philosophy; methodological choice; strategy; time horizon; and, techniques and procedures. Following, each layer will be examined for the current research.

Figure 4.1: The 'Research Onion.'



Source: Saunders and Tosey (2012, n.p.).

Through the academic debates of Shove (2010; 2011) and Whitmarsh, *et al.* (2010), reviewed in Chapter Two, the epistemological view is formed for the current research. Both the positivist and constructivist views are acknowledged and an effort is made to honour each respectively. The positivist approach described by Whitmarsh, *et al.* (2010) has been employed through quantitative analysis of questionnaires and segmentation to determine variables that

significantly affect water behaviour. The broader constructivist thinking of Shove (2011) has been incorporated by use of qualitative analysis of focus groups, semi-structured interviews and a Delphi consultation aimed at including the 'voice' of different stakeholders in an attempt to define, and re-define, normal practice. In this way the research will be informed through the theory of critical realism. Easton (2002) reports critical realism is a common research philosophy in marketing research. Critical realism is the belief that knowledge is formed through information that is initially experienced by the senses and is then subjectively processed by the mind (Miller and Tsang, 2011). Thus a researcher using critical realism is concerned with what is immediately experienced and also what structures and relationships lie beneath them.

Continuing to the second layer, the methodological choice of mixed methods was implemented with qualitative (focus groups, semi-structured interviews and Delphi consultation) and quantitative analysis (questionnaire and Delphi consultation). Note, the Delphi technique collected both quantitative and qualitative data. In the previous literature review chapters, a variety of methods applied to social marketing efforts are highlighted (focus groups; diary recordings; semi-structured interviews; questionnaires; and, co-creation workshops). Here a mixed methods approach was chosen to create both depth and breathe in findings as recommended in marketing research by Zaltman (2003).

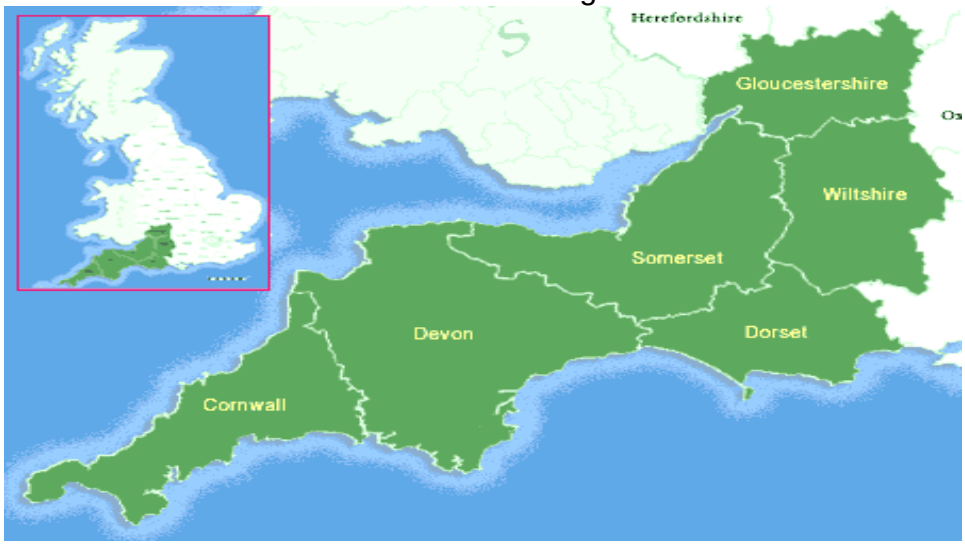
Next, the third layer engaged the strategy 'survey,' including guests, managers and a panel of experts. Surveying multiple stakeholders was deemed appropriate as all represent potential agents for change and their behaviours are not mutually exclusive. The fourth layer, time horizon, applied a cross-sectional investigation as surveying occurred at one specific time and

place. Because of the depth of the final layer, techniques and procedures, they will be explained in later sections, exploring the four stages of the research.

4.3 Defining the Survey Area

As the research was conducted in partnership with South West Water, an effort was made to include tourism accommodation managers within the company's geographical distribution area in Stage One and Two. However, in Stage Three, the guest sample was comprised of individuals from England and Wales, whom had stayed in an English or Welsh tourism accommodation in the past four months. To aid in understanding the impacts of tourism in England, a general description will first be provided to better orient the reader. Next, because Stage One and Two, and the research in general, was most interested in the tourism industry operating in South West Water's distribution area, the South West most English counties of Devon and Cornwall are further investigated. Figure 4.2 is presented to generally orient the reader while Figure 4.3 represents the specific distribution area of South West Water.

Figure 4.2: The Six Counties of South West England.



Source: Pictures of England (2014, n.p.).

Figure 4.3: Operational Area of South West Water.

Source: South West Water (2015, n.p.).

4.3.1 Tourism in England

In 2014, VisitEngland estimated that England received 29.8 million inbound trips. This was accomplished by an estimated 92.6 million overnight trips and a total of 1.35 billion day trips (VisitEngland, 2014). Domestic tourism was the greatest economic contributor with Deloltte (2013) reporting, excluding London, domestic tourist spending in England represented 88% of all tourism activity. The primary purpose of these domestic trips were for holiday (40.7 million), visits to friends and family (35.9 million) and business (13.6 million) (Deloltte, 2013). International visits also heavily favoured the holiday experiences with Deloltte (2013) reporting the primary purpose of travel for inbound tourists as holiday (11.9 million), visits to friends and family (8.8 million) and business (6.7 million).

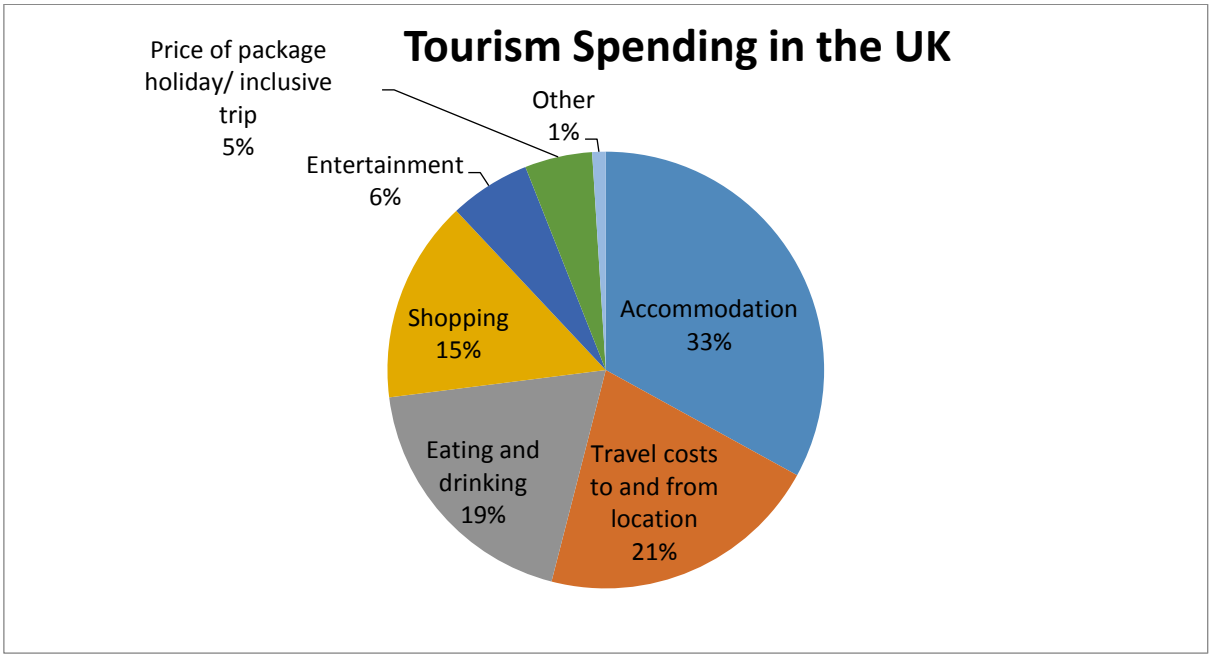
Large numbers of tourists also meant substantial contributions to the economy. VisitEngland (2014) estimated tourism directly represented approximately £82 billion in spending. In 2013, Deloltte found this direct tourism

contribution represented 4% of England's GDP and 5.2% of its jobs. When indirect impacts were added, the figures rose to 8.8% of GDP and 9.4% of jobs respectively. Further, if wage spending was included, tourism represented 11.1% of the national economy (Deloltte, 2013). Including indirect spending, VisitEngland (2014) estimated that this economic contribution represented £106 billion to England's economy and 2.6 million jobs.

This spending was greatest in tourism accommodation. In 2011, VisitEngland found tourist spending was greatest for tourism accommodation in the whole of the UK. While this data was not available exclusively for England, nor more recent spending, general patterns are pertinent to this study. Figure 4.4 represents the average spending by a typical UK holiday visitor in 2011. Specifically, accommodation is the number one expenditure, followed by travel, food and drink, shopping, entertainment and so forth. While the tourism industry is currently a major contributor to the English economy and much of this appears to be in accommodation, according to both Deloltte (2013) and VisitEngland (2014), the tourism industry in England, similar to global trends, is expected to continue to grow.

Importantly, tourism visitations and spending are not distributed equally throughout the country. For example, London represented a disproportionate amount of international visits, accounting for 53.3% of spending by overseas visitors and a total of £25.4 billion for all tourism activities (Deloltte, 2013). The next highest spending occurred in the South East (£12.2 billion) and then the South West (£9.7 billion). As such, tourism is a key aspect of the English economy and this is particularly true in certain regional economies. One such regional economy is that of Devon and Cornwall, within South West Water's primary distribution area.

Figure 4.4: Spending by Tourists in the UK.



Source: VisitEngland (2011, p.3)

4.3.2 Tourism in Devon and Cornwall

South West Water estimates they provide services to 9,433 accommodation providers with most businesses being considered Small and Medium Tourism Enterprises (SMTEs) (Coles, Merchant and Nankervis, 2013). This number is an estimation because some accommodation may be classified as residence and the status of such businesses fluctuates. The distribution area is roughly defined as the South West most English counties of Cornwall and Devon and geographically small sections of Summerset and Dorset.

Since tourism data is not exclusively available for the small sections of Somerset and Dorset serviced by South West Water, the counties of Devon and Cornwall will serve as the study area for tourism accommodation. This is considered warranted as all tourism accommodation engaged in semi-

structured interviews (Stage Two of the methods) were within these two counties. The 1969, Development of Tourism Act in England helped shape 8 regional tourism areas (London could be considered a 9th). The Tourism Policy of March 2011 has removed regional funding and directed it towards more localized Destination Management Organizations (Dinan, Hutchison and Coles, 2011). Combined with scaling back of national budgets this shift has created a lack of data and as such, regional tourism information is limited. Since the most accurate and granulated data was provided by the regional tourism organizations, it is described here.

Together, in 2010, the two counties of Devon and Cornwall represented £2,328 million of revenue from all tourism spending, equal to over half the South West region's (including all 6 counties outlined in Figure 4.3) tourism revenue (South West Tourism, 2010). According to South West Tourism (2010), tourism represented 11% of all regional jobs in Devon and the country of Cornwall had the highest amount of direct tourism jobs in the nation at 22%. It is important to note that these figures do not represent jobs that rely on indirect contributions from tourism (e.g. petrol sales, supermarkets, etc.). More to the point, the two counties of Devon and Cornwall, both within the geographical distribution of South West Water, are major UK holiday tourism destination. This observation is supported by the less granulated data from Deloltte (2013) whom found of 9 regions in England, tourism spending was third highest in the South West. With an understanding of the study location, the four stages of the methods will now be reviewed.

4.4 Stage One: Manager Focus Groups

During the first stage of this research, three focus groups with tourism businesses were conducted in November, 2014. This was also the final stage of a previous research effort investigating how tourism accommodation in South West England manage environmental costs. These focus groups represented the final stage of a five year project employing the case study method with 50 tourism business to measure and identify opportunities to reduce environmental impacts. Of note, this stage of research was conducted as the final part of an extensive programme of research at the University of Exeter. The author of this thesis acted as a full member of the research team and played an integral role in the design, execution and analysis of that research which covered environmental management practices in the widest sense. As such, this author had equal claim on the intellectual property. While the collective analysis of this research has been published elsewhere (see Coles, Warren, Borden and Dinan 2016), for the purpose of this thesis, the original data has been reworked to focus solely on water-related issues. The original work included analysis of businesses' management of both water and electricity. This new analysis focused on water exclusively, incorporating previously unpublished quotes and thematic coding of water management specifically. This new analysis informed the subsequent development and design of the empirical work which is reported here. Specifically, focus group data was used to inform the questions and direction of interviews in Stage two of this research. Additionally, findings aided in the creation of the guest survey (Stage Three) and Delphi consultation (Stage Four).

Focus groups have been used extensively in tourism studies (e.g. Roberts and Tribe, 2008; Barr, *et al.*, 2010; Chen and Peng, 2014); water conservation research (Brown, Medd and Anderson, 2012; Cole, 2012; CCWater, 2006) and becoming more popular in the social marketing literature (Troung and Hall, 2013). Sekaran and Bougie (2013) describe focus groups as a commonly used method of qualitative data collection in business studies that typically bring 5-10 participants with a moderator leading the discussion, for about two hours, on a specific topic or concept. The aim of focus groups is to bring out opinions, experiences and impressions by participants on the given subject. The moderator steers the discussion and ensures everyone is participating. The flexible structure of the focus group may allow members to express their true opinions without feeling persuaded into providing what the moderator is looking to solicit (Barbour, 2013).

4.4.1 Sample- Stage One

All participating business, 16 in total, provided accommodation to tourists except two. Despite some participants lacking accommodation, all findings were used for analysis because the goal of these focus groups was to understand how tourism businesses manage water and how they perceive tourist and staff use. These findings were justified to contribute to the current research effort as they provide a managers perspective on water management within tourism businesses. The first focus group was conducted at the University of Exeter, UK, on 5th November, 2014, with nine participating accommodation managers from six accommodation (some accommodation had multiple managers participating in the focus group). Five participants attended

the second focus group which was conducted at Haven Hotel in Sandbanks, UK, on 15th November, 2014. The third focus group was conducted at the Queen's Arms Inn in Somerset, UK, on 19th November, 2014. A variety of accommodation types were represented in the focus groups (self-catering, guesthouses, B&Bs and hotels). Participants were self-selected through their participation in the previous research effort. Due to the use of four stages in the methods, details of each sample are provided in the results section of each stage respectively. This was done to enable the reader to more easily connect data points with the sample details.

4.4.2 Themes for Discussion- Stage One

Scrutiny in considering themes for discussion in focus groups is vital because the moderator is responsible for steering participants without forcing ideas (Sekaran and Bougie, 2013). Here, themes evolved through concepts developed in the previous stages of these case studies. Themes included how water and electricity are used in day to day operations and are embedded in the business model; how guests interact with these resources; water and electricity security; and barriers and drivers to efforts to reduce usage by all major stakeholders including the managers themselves (Appendix 2).

4.4.3 Data Analysis- Stage One

All data pertaining exclusively to water was highlighted and analysed. Quotes were placed into pre-determined themes as previously outlined above. Themes were then analysed through investigating patterns in word choice and

interpretation of statements. Common trends emerged and these findings were then used to inform the design of subsequent research instruments in proceeding stages and contribute to overall project outcomes.

4.5 Stage Two: Manager Semi-Structured Interviews

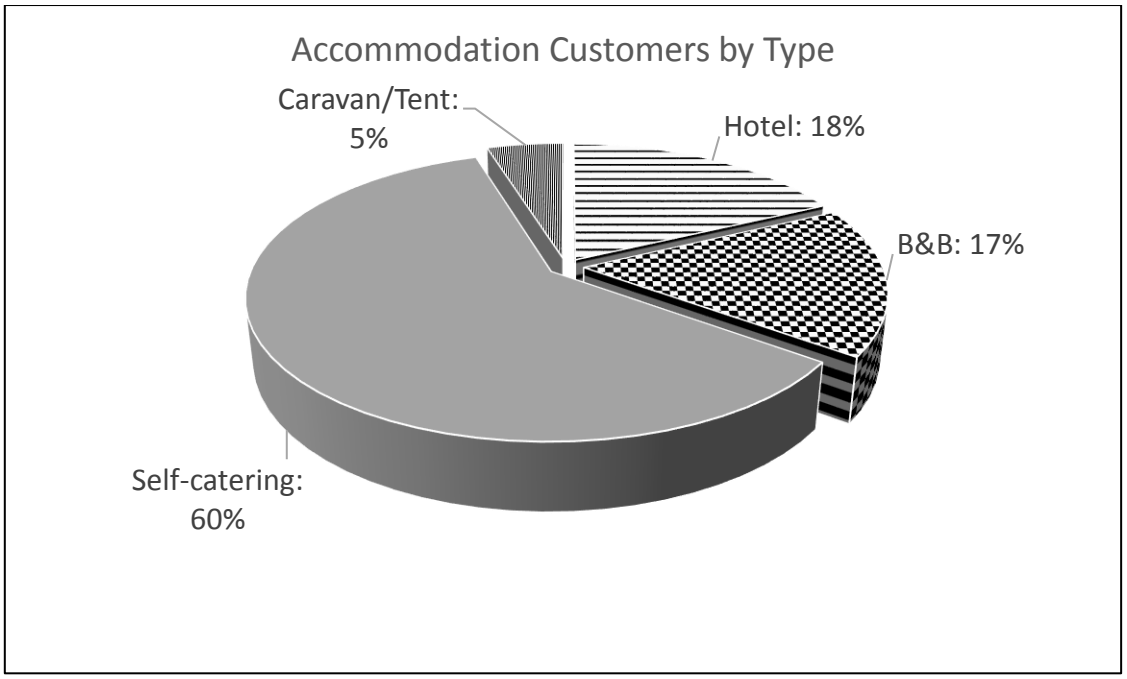
In Stage Two, semi-structured phone interviews were conducted with a new sample of tourism accommodation managers to better understand opportunities for reducing water usage. A semi-structured interview is a qualitative method where a researcher asks a participant set questions and also allows the dialogue to become unstructured and flexible to the interviewees' responses (Barbour, 2013). This method may allow participant to lead the conversation when desired and also enable the researcher to guide the conversation when it is determined necessary. Semi-structured interviews are becoming a more popular qualitative method in the social marketing literature (Troung and Hall, 2013). Combining less structured interviews and focus groups has been used in business research extensively to add depth to data collection (Sekaran and Bougie, 2013). Here semi-structured interviews aimed to expand on concepts developed during the previous focus groups and discuss social marketing concepts.

4.5.1 Sample- Stage Two

The sample was selected by convenience from a list of South West Water customers. Figure 4.5 represents the type of accommodation represented from 8,563 customers obtained from a database of South West Water. The data

does not indicate size of the accommodation, however, Coles, Merchant and Nankervis (2013) observe that the South West of England is dominated mostly by micro and small tourism accommodation.

Figure 4.5: Type of Accommodation Recorded in South West Water Customer Data.



Source: Author.

An effort was then made to collect a representative data set to that of the South West Water customer data. This was done through assuming stratification by business size and type as seen in Figure 4.5. As defined by Storey (1994), micro-business have 0-9 Full Time Equivalent (FTE) employees; small businesses have 10-49 FTE; and, medium businesses have 50-100 employees. Note that any cell in Table 4.2 with Not Applicable (N/A) represents where minimal or no businesses exist within the given size and type in the sample area. Businesses, where contact information was available, within each stratified grouping were emailed and interviews were held with the first

respondents until saturation in findings was determined. The final sample size represented 16 managers: Hotels (3); B&Bs (3); self-catering (7) and tent/caravan (2). The sample was an effort to survey a group of businesses indicative of the diversity within the region, though due to convenience sampling, no claims are made that it is representative. At least one manager per stratified grouping was interviewed. Interviews were conducted until saturation in findings was determined.

Table 4.2: Method of Stratification for Manager Interviews.

Business Size	**Type of Accommodation**			
Micro	Camping/Caravan	Self-Catering	B&B	Hotels
Small	Camping/Caravan	N/A	N/A	Hotels
Medium	N/A	N/A	N/A	Hotels

Source: Author.

4.5.2 Themes for Discussion- Stage Two

Semi-structured interviews covered themes developed from findings in the focus groups in Stage One and after review of findings from O'Neill, *et al.* (2002), whom conducted similar research. Themes were developed into four general areas for discussion: Water management by the accommodation; guest and staff use; ideas for initiatives to reduce water use and feedback on previously brainstormed interventions; and, the role of other stakeholders outside of the business. Each theme is presented in Appendix 3.

Questions concerning water management by the accommodation were asked to better understand concepts surfacing from the previous focus groups. Next, how businesses managed water in their business plans and day to day operations provided important basic demographic information about the accommodation. Questions on the use of water by guests and staff allowed managers to consider how their actions may affect the behaviour of other stakeholders. When discussing feedback on initiates previously examined in the academic literature, managers were asked about the viability of implementing them into their operations. Specifically, they reviewed: money-off vouchers (Shang, *et al.*, 2010); donations to charity (Shang, *et al.*, 2010); providing a personalized measurement of water use to each guest; water saving technologies (O'Neill, *et al.*, 2002); and, messaging (e.g. Goldstein, *et al.*, 2008; Shultz, *et al.*, 2008, etc.) using psychological theories (e.g. loss aversion, localized descriptive norms, etc). New ideas for initiatives were then brainstormed by participants and feedback was solicited on ideas previously created by other managers. This allowed managers to create solutions while later interviewees could also evaluating peer ideas. Finally, questions about the role of external stakeholders (South West Water, government, non-profits, media, tourism boards, etc.) were asked to better understand potential upstream social marketing messages.

4.5.3 Data Analysis- Stage Two

Transcriptions were coded by theme and key words. Coding themes included: Barriers; drivers; luxury; GTBS versus non-GTBS accommodation; ideas for new initiatives; feedback on previously brainstormed initiatives; type of

accommodation; and so forth. Codes were created with actual quotes from managers, enabling managers to define relationships with their own words. To visually represent data, as suggested by Sekaran and Bougie (2013), matrices were created with key concepts, identified through coding. Additionally, word counts were conducted for the key concepts of ‘barriers’ and ‘drivers’ to further highlight trends in the data.

4.6 Stage Three: Guest Questionnaires

In Stage Three, an online panel representing potential guests completed a questionnaire. The purpose of the questionnaire in this study was to segment tourists based on their water use behaviours and investigate how each segment may be affected by social marketing interventions developed by accommodation managers in Stage Two. Veal (2011) has identified that online questionnaires are an increasing trend because of their low cost and time commitment. This trend has become increasingly popular in tourism behaviour studies (e.g. Dolnicar and Grün, 2009; Shang, *et al.*, 2010; Miller, *et al.*, 2014). According to Poynter (2010), 20% of all global marketing data is collected online. In a review of 78 academic articles in tourism studies, Dolnicar (2013) found an increasing rate of online use with 23% reporting online data collection.

To ensure the questionnaire was comparable to other findings in the literature, a review of past methods in the social marketing research was conducted. The next section will discuss this review to establish precedent for inclusion of techniques and questions into the questionnaire. Then a description of the sampling technique, survey instrument and data analysis of this methods stage are provided.

4.6.1 Reviewing Methodological Precedent

There are three primary areas needing review in the literature. The first is which demographic attributes have been shown to influence water behaviour. The second is to investigate which behavioural and/or attitudinal variables have been clustered to determine sustainable 'life-style' groups. And the third is how spill-over has been previously measured. Table 4.3 demonstrates the general methods applied in research using 'life-styles' through seven seminal examples. These examples were selected from the social marketing literature review in Chapter Three based on their relevance to the current study and because they represent a variety of qualitative and quantitative methods.

To summarize, the DEFRA (2009) report examined UK home residences' expectations around water use through the application of focus groups, two day behavioural diary recordings and semi-structured interviews. Next, Dolnicar and Grün (2009) investigated spill-over in behaviour from home to holiday using online questionnaires. This was followed by Barr, *et al.* (2010) whom investigated general environmental behaviour from home and whilst on holiday. The UKWIR (2014) reported segmentation of water users in UK homes through questionnaires. Then, Shaw, *et al.* (2013) investigated holiday travel behaviour using co-creation workshops. And finally, Miller, *et al.* (2014) investigated the drivers of spill-over through the use of online questionnaires.

Table 4.3: Literature Review of Methodological Precedents.

Literature	Audience	Behaviour	Survey Instrument(s)	Sample Size	Method of Analysis	Key Demographic Determinants	Segmentation Variables	Determinant of Spill-Over
DEFRA, 2009	Home	Water	Focus Groups	18 Groups, 8 Participants Each	Thematic	Metering Status & Age	Environmental Values, Beliefs and Attitudes (Qualitative) (DEFRA, 2006) & Metering Status	N/A
			Diary Recordings	144				
			Semi-Structured Interviews	70				
Dolnicar & Grun, 2009	Home and Holiday	Recycling	On-line Questionnaires	798	Latent Class Analysis and Factor Analysis	Age, Political Leaning, Location of Residence, Travel Motivations, Number of Holidays/Year & Gender	Environmental Behaviours (20); 6 Segments	Cross-Tabulation of Segment Membership
Barr, Shaw, Coles & Prilliwitz, 2010	Home and Holiday	Transportation	Focus Groups	3 Groups	Coded, Analysed & Grouped	Age, Employment Status & Household Composition	Environmental Behaviours (8); 3 Segments	Qualitative Analysis
Barr, Shaw & Coles, 2011b	Home and Holiday	General (transportation focus)	Questionnaires	202	Hierarchal Cluster Analysis and Factor Analysis	Age, Employment Status & Household Composition	Environmental Behaviours (8); 3 Segments	Kruskal-Wallis Test Between Home and Holiday Behaviour Comparing Amongst Segments
UKWIR 2014	Home	Water	Questionnaires	1,500	Hierarchal Cluster Analysis and Factor Analysis	Age, Home Ownership, Number of Household	Water Attitudes, Opinions and Behaviours; 5 Segments	N/A
Shaw, Barr & Wooler, 2014	Holiday	Transportation	Co-Creation Workshops	3 Groups	Thematic	Age, Marriage Status, Income & Environmental Attitude	Convenience: Generation Y, Suburban Families & Empty Nesters	N/A
Miller, Merrilees & Coghlan, 2014	Home and Holiday	General	Focus Groups	Not Specified	Thematic		N/A	N/A
			Questionnaires	451	Multiple Regression	N/A	N/A	Ratio Between Sites of Practice

Source: Author.

In Table 4.3, varying demographic information and other background variables were shown to affect water use in the home and on holiday among the selected works. Those variables included: Metering status; age; homeownership and number of residence in the household, age, political leaning, location of residence, employment status, income, travel motivations, number of holidays per year; environmental attitude and gender. To better enable the findings of this project to be compared to others, these variables were included in the survey instrument as discussed later in this chapter.

Segmentation is a key benchmark in the social marketing process (Andreasen, 2002; French, *et al.* 2010; Corner and Randall, 2011). According to Dolnicar (2004), segmentation is commonly performed through either *a priori* or data driven means. *A priori* techniques use common sense and existing ideas or efforts to place groups of people into categories. Data driven (or *a posteriori*) efforts use quantitative data to segment the audience usually using cluster analyses.

Six of the seven studies reviewed in Table 4.3 segmented their audience, with the exception being Miller, *et al.* (2014). Shaw, *et al.* (2013) segment their audience through *a priori* means. To do this they consulted the DEFRA (2008) report, data from Mosaic UK (2009) and 'further market segmentation analysis' (p. 61). From this, they produced three market segments for transportation behaviour: Generation Y; Suburban families; and, Empty nesters.

DEFRA (2009) applied *a posteriori* means, using previous segmentation by DEFRA (2008) and found seven 'sustainable life-styles.' These seven segments were created using qualitative analyses of focus group interviews. DEFRA (2009) further segments their audience by metered and un-meter

individuals using findings from CCWater (2006) that metering status is an important demographic for water users. The remaining four studies also used data driven segmentation.

Dolnicar and Grün (2009) segment their sample using latent class analysis for multivariate categorical data. Clusters were determined using 20 environmental behaviours and a total of six segments were identified. Analysis of variance (Kruskal-Wallis or Chi-Square Tests) was then used to determine the significance of variables between clusters. Barr, *et al.* (2010) and Barr, *et al.* (2011b; 2011c) applied a similar approach, using hierarchal cluster analysis to segment their audiences. They clustered 8 behaviours and found three segments within their sample population. Environmental behaviours were used as segmentation variables. Conducting similar *a posteriori* means, the UKWIR (2014) report used hierarchal cluster analysis to segment around behaviours, attitudes and opinions. While no information was available on how many variables nor the specific attitude, opinions and behaviours clustered, 5 segments were identified.

Three important issues arise relating to segmentation: sample size, number of variables clustered and type of variables clustered. Here, sample sizes used for segmentation varied greatly from 202 to 1,500 individuals (where sample size was reported). However, more recent findings have been reported to aid in determining an appropriate sample size. Dolnicar, Grün, Leish and Schmidt (2013), through a simulation study using cluster analysis, analysed data with known structure to determine an appropriate sample size. A ratio of 70:1, sample size to number of clustering variables, proved to be adequate for maintaining known structure in each simulation.

The number of variables clustered in this literature review also varied. Studies used eight and twenty with the types of variables differing between studies. They included environmental behaviours, attitudes, opinions and beliefs. Through this review, it is not clear which variables should be used for clustering. To date, this issue remains unresolved in the literature and further research into which variables to segment is needed. What is clear from this review is that a variety of options exits for segmenting a population, which is supported by Dolnicar's (2004) findings that past segmentation practices have been varied.

As reviewed in Chapter Two, Shaw and Williams (2004) identify spill-over from contrasting sites of practice as a major theme in tourism studies. Four main methods for determining spill-over were identified within this review: Qualitative analysis (Barr, *et al.*, 2010); significant differences between home and away behaviour using analysis of variance techniques (Barr, *et al.*, 2011b); cross-tabulation of segment membership (Dolnicar and Grün, 2009); and, rudimentary ratio between behaviour at home and away (Miller, *et al.*, 2014).

Specifically, Barr, *et al.* (2010) use qualitative analysis to determine spill-over among audience segments. Through coding, analysing and then grouping interview data by home and away they discover a substantial difference in behaviour and attitude between these sites of practice. Building upon these findings, Barr, *et al.* (2011b) investigated the analysis of variance to determine significance of behavioural flipping between sites and practice among varying segments. They reported a greater shift in behaviour from one cluster over another, evidencing a lack of spill-over.

Dolnicar and Grün (2009) used cross-tabulation of segmentation membership to measure spill-over. Having found 6 segments clustered around

home behaviour they then changed the variables for segmentation to responses to behaviour whilst away. Next they measured the percentage of individuals that left their previous segment. If a substantial amount of individuals were seen moving to less efficient behaviour on holiday then it was determined that flip over occurred. Finally, Miller, *et al.* (2014) applied a simple ratio of holiday behaviour (A) over the same behaviour at home (B). This A/B ratio provided a rudimentary percentage of behaviour that flips from one site of practice to another. Applying these methods to the current research effort, the following sections will build upon this review.

4.6.2 Sample- Stage Three

The sample was comprised of individuals living in England and Wales. They were combined as one sample because they are regulated by the same national organization: Ofwat. Scotland, Ireland and Northern Ireland were excluded because they have different regulatory standards which could potentially affect metering rates and behaviour. A market research company (SmartSurvey and partnering company Gint) was hired to administer questionnaires as performed in similar research by Dolnicar and Grün (2009) and Shang, *et al.* (2010). Market research companies maintain internet panels representative of the English and Welsh national census profiles. Participants of these panels give their permission to be contacted for the purpose of research through a wide range of communication channels such as email, telephone and mail. Participants receive a small compensation for their help. These payments depend on the time needed to finish the questionnaire. Within the panel, a 15 minute questionnaire was sent to randomly selected participants

between the dates of 28th-30th August, 2015. These dates were chosen because they marked the end of a major holiday season in the UK and may have aided participants' in recalling more recent behaviour whilst in tourism accommodation. According to the UK Office for National Statistic (2015), in 2014 the estimated population of England was 54.3 million and Wales was 3.1 for a total of 57.4 million. With a population of that size, at a 95% confidence level and confidence interval of 5, a sample size of 384 was needed to reflect the target population. Therefore in this study, surveying ended once the first 400 participants finished the questionnaire.

4.6.3 Survey Instrument- Stage Three

The questionnaire contained 26 questions and was segmented into 10 pages with seven distinct sections (Appendix 4). The first section was comprised of a screening question to ensure the recipient had an appropriate recall of their last stay in an English or Welsh tourism accommodation by asking 'have you stayed in a tourism accommodation in the past 6 months in England or Wales?' Again, combining England and Wales was justified since they are both regulated by the same national legislative organization, Ofwat. The length of six months was chosen as a compromise between less elapsed time (e.g. one month) which might be too restrictive, resulting in excluding a higher number of recipients, and a greater elapsed time (e.g. one year) which could reduce their ability to accurately reflect on their past behaviour. Additionally, the six months was recommended by SmartSurvey as the minimal amount of time to keep from overly restricting the population and potentially fielding a smaller sample then

desired. If recipients answered ‘no’ to this question they were ineligible to complete the questionnaire.

The second section of the questionnaire was concerned with the accommodation type and purpose of travel. Dolnicar and Grün (2009) reported these two variables significantly affected environmental behaviour on holiday. However, Shang, *et al.* (2010) found no significant difference between travellers in accommodation for holiday and business with regard to their intention to reuse towels. Thus further investigation into their water use behaviours and attitudes was warranted.

In the third section the focus shifted to participants’ attitudes and behaviours towards water during their last stay in tourism accommodation. Scales from other research were adopted for this section when available. For example, ‘I let the tap run when brushing teeth;’ ‘I have longer showers when a shorter one would do;’ ‘I control the water use when taking a shower to minimize my use;’ and, ‘I let water run until it is at the right temperature’ were adopted from previous studies (Miao and Wei, 2013). Other questions were obtained from UKWIR (2014) and DEFRA (2009) such as ‘I take multiple showers/baths in a day’ and ‘I shower instead of taking baths specifically to save water.’ Questions were reverse coded to ensure more accurate findings as recommended by Dolnicar (2013).

Section four was compiled of open ended questions, following the recommendations of the social marketing literature (e.g. French, *et al.*, 2010; Corner and Randall, 2011; Shaw, *et al.*, 2013) to identify the drivers and barriers to a desired behaviour. Open ended questions are important to survey research as they allow the audience to better express their true feelings (Payne,

1980; Krosnick, 1999). It was determined that multiple choice was too restrictive for this particular effort from the initial pilot (discussed more in depth later in this section).

Investigating how initiatives and messages, previously identified by tourism accommodation managers in Stage One and Two, may affect the guest experience was tested in section five. Again, questions were reverse coded to ensure more accurate recording. Likert scale and multi-choice questions were used with the additional opportunity for recipients to add their own ideas for creating messaging to encourage water efficiency.

To explore feelings and behaviours concerning water efficiency at home, section six applied similar scales as those applied in section two, which investigated water use in accommodation. An effort was made to use the same language between each section to better compare behaviour from the two sites of practice. Here additional questions (purchasing water efficient products; use of rainwater; filling the washing machine; and, fixing leaks) were added to explore water saving behaviours at home that do not exist in tourism accommodation. These questions were developed through conversations with South West Water and adapting questions from UKWIR (2014) and DEFRA (2009). The section ends by comparing reporting efficiency efforts in the home (question 15) and then comparing them to behaviour on holiday (question 16). Some potential water efficient behaviours in the home (e.g. using water butts; not over watering plants; etc.) were not recorded due to a desire to keep the instrument at an appropriate length.

The final section collected demographic and personal information from participants. Key variables were identified in the literature review presented in

Table 4.3. They included: age, income, education level, water meter status, social status, annual number of holiday and business travel day, residence status and household composition. Additionally, participants' water company was recorded as a rough means for geographical comparison. Appendix 5 highlights the supporting literature and brief justification for each question. Finally, this section also included the New Environmental Paradigm (NEP) survey instrument reviewed in Chapter Two. This was justified as Dolnicar and Grün (2009) found environmental behaviour as a significant driver of environmental behaviour on holiday. While the full NEP instrument is comprised of fifteen questions, only five question were used here as seen in work by Park, Kim and McCleary (2012). This was done to reduce the length of the survey for both cost reduction and concerns of longer online surveys producing less quality data (Callegraro, Manfreda and Vehovar, 2015). Dunlap, *et al.* (2000) contend that the NEP contains five distinct factors. Therefore, one question was selected for each factor to ensure the modified version contained each of the five factors.

Prior to sampling, the questionnaire was first piloted between 15th and 30th May, 2015, with a sample of 21 individuals. This sample population was obtained through convenience with both a local mountaineering club and gardening club. While this population represented varying ages, interests and genders, it was not randomly selected and therefore not reliable for direct analysis. However, findings did allow an initial evaluation of some of the strengths and weaknesses of the instrument. Several employees in the demand strategy team of the business partner to this research, South West Water, also reviewed the survey and provided feedback. The pilot exercise yielded two questions of concern ('would you report a leak to management' and

'how many stars were your accommodation rated') where both questions yielded a high number of 'don't know' responses. As a result the questions were removed as it was determined they would yield substantially low response rates. The pilot also revealed that open ended questions and questions asking for creating new ideas yielded a healthy response rate. For example, the average number of words entered for open ended questions were seven and a non-compulsory question asking for creation of new ideas had a 20% response rate. The average time for completing the pilot was under 15 minutes which was deemed an appropriate amount of time by SmartSurvey for the research budget. Additionally, the pilot was used to sense test the stylistic components of the survey. For example, sections were presented individually to guide the recipient more smoothly through each part and a visual representation of their progress was provided at the bottom of the instrument to encourage their continued participation.

4.6.4 Data Analysis- Stage Three

A sample size of 408 observations was obtained from participants in England and Wales using an internet panel provided by a third party. SPSS version 22 was used to analysis the data. Prior to exploring the data, cleaning exercises and statistical checks where conducted. Specifically, checks for missing data, identification of outliers, linearity, normality, homoscedasticity and internal consistence for groups of scales. Following, general descriptive characteristics of the sample are examined. Checks for missing data were conducted visually. No missing data was identified as a forced response for each question was required to complete the questionnaire. To detect outliers, scatter plots were

created and analysed. Additionally, a multivariate test for outliers was conducted by computing the Mahalanobis D^2 for each observation across a set of variables as recommended by Hair, Black, Babin and Anderson (2011). All outcomes were above the recommended score of 3, ($p<0.005$), for all variables, indicating no outliers in the sample. During this same exercise linearity was determined for each variable visually through observing the relationships presented in each scatterplot.

Normality was checked with histograms and normal probability plots of each variable. All variables appeared to have close to a normal distribution. However, examination of kurtosis and skewness z scores and Shapiro-Wilks and Kolmogorov-Smirnov tests were performed, revealing values of $p<0.001$ for most variables. Therefore some data was not considered normally distributed and thus non-parametric tests were deemed most appropriate for data analysis.

Next homoscedasticity, which relates to the assumption that dependent variables display equal levels of variance with each predictor variable, was checked. Assuring homoscedasticity is desirable because the variance in dependent variables should not be explained in a limited amount of independent variables (Hair, *et al.*, 2011). To test for homoscedasticity, Levene tests were run between all sample characteristics (age; gender; income; education; occupation; purpose of trip; housing situation; amount of work travel per year; amount of holiday travel per year; number of members in the house hold; presence or absence of children; water company; NEP; and, metering status). Some correlations were found but no more than two associations per characteristic and thus the relationships were considered to be homoscedastic.

Finally, internal consistence of scales were examined using a series of Cronbach's alpha tests. While other methods exist and some have argued for their use, it is still the most widely used test for internal consistency (Cho and Kim, 2015). Cronbach's alpha tests were conducted on scales used for questions 6 (motivations in tourism accommodation) with a score of 0.644; question 7 (behaviours in tourism accommodation) with a score of 0.607; question 10 (initiatives) with a score of 0.816; 11 (messages) with a score of 0.837; 15 (behaviour at home) with a score of 0.650; and 22 (five NEP variables) with a score of 0.508. According to Ferrer, Hamagami and McArdle (2004), a recommended score of 0.7 is sufficient to show internal consistency. However, according to Drasgow (1984) a score of 0.6 is sufficient for exploratory research. Ferrer, Hamagami and McArdle (2004) explain that the fewer the number of variables in a set, the lower the score is likely to be. The low NEP score could be due to the use of only 5 questions instead of the conventional 15 developed by Dunlap, *et al.* (2000). Due to the Cronbach's alpha score below 0.6, the measure of NEP was not considered reliable and therefore not used in this analysis.

The relatively low Cronbach's alpha scores (below 0.7 but above 0.6) in behavioural scales are somewhat surprising as many of the questions were used from previous literature as outlined in the methods chapter. In spite of this, all other scores were considered reliable, albeit some being lower than established prescription suggests, as this is exploratory research. While more variables may have aided this research, the decision to use a low amount was due both to financial constraints and recommendations from Dolnicar (2013) who suggests using fewer questions to ensure high participant engagement and therefore, higher data quality.

4.7 Stage Four: Delphi Consultation

The Delphi method has been used to evaluate and progress theory extensively in the conventional marketing literature (see Best, 1974; Richard and Curran, 2002; Kerr and Patti, 2015), though to a lesser extent in the field of social marketing (see Ling, Franklin, Lindsteadt and Gearson, 1992; Griffiths, Blair-Stevens and Parish, 2009; Johnson, Jones and Iverson, 2009; Aschemann-Witzel, *et al.,* 2012). A Delphi consultation is a series of repetitive surveying events, with a selected panel of experts, which aim to discover consensus on issues (Linstone and Turoff, 1975). While the method has been applied within social marketing, it has not been employed as it is here, to analyse and prioritize outcomes. Potential initiatives created though conventional marketing campaigns are commonly evaluated and prioritized unilaterally by a high ranking individual in a firm, a hired third party, through group consensus between key individuals within the business (Tafreshi, Tasic, Staake and Fleisch, 2015), use of co-created between consumers and producers (Shaw, *et al.*, 2013) or a combination of these efforts. As an alternative to these approaches, here the Delphi method was applied to evaluate potential initiatives, developed through the social marketing process, aimed at promoting water efficiency within the tourism accommodation industry.

First applied in the cold war to predict enemy attacks (Diamond, *et al.* 2014), the Delphi method was later developed in 1953 by Olaf Helmer and Norman Dalkey for the U.S. RAND Corporation as a tool to include the 'voice' of the practitioner and academic (Buckley, 1995). The Delphi method can be defined as 'a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a

complex problem' (Linstone and Turoff, 1975, p.3). Three different Delphi techniques exist (Hiltz and Turoff, 2003; Stitt-Gohdes and Crews, 2004): The Policy Delphi Model; Trend Model; and, Structural Model. The Policy Delphi aims to discover the 'for' and 'against' arguments concerning differing resolutions for a specific issue and does not produce a consensus (Hiltz and Turoff, 2003). The Trend Model aims to identify the trends concerning the group and participants predict where they believe trend will be in the future (Turoff, 1970). Participants are asked to brainstorm potential assumptions and uncertainties to reflect on the process and ensure critical thinking. And finally, Structural Modelling encourages individuals to express judgements and uses them, independently, to create consensus on issues of interest (Stitt-Gohdes and Crew, 2004).

4.7.1 Criticism of the Delphi Technique

Mostly due to the many varying uses of the Delphi technique and poor explanation of the process when reporting results, this technique has been criticised heavily in the literature (e.g. Stewart, 1987; Bowers, 1997; Rowe and Wright, 1999; Garrod and Fyall, 2005). Through a meta-analysis of 100 studies using a Delphi, Diamond, *et al.* (2014) find a lack of continuity in reporting between studies using this method. Specifically they find a high absence of: reporting on the purpose of the Delphi (i.e. is the goal to find consensus or just quantify agreement?); criteria for how participants were selected; how consensus was defined; threshold values used for determining consensus if applicable; if items were dropped between rounds of surveying; and, stopping rules for discontinuing the consultation.

Concerns over practical issues also exist where, for example, Jairath and Weinstein (1994) and Williams and Webb (1994) criticize the convenience of the method, stating that good research requires substantial time commitment and face to face communication. Woudenberg (1991) adds that relying on opinion can be a difficult metric for assessing the reliability and accuracy of the method. The selection of experts may also be of concern, where assessing the degree of expertise incorporated into the consultation is difficult (Makridakis and Wheelright, 1978). Finally, Sackman (1975) critiques the goal of the method, stating that consensus could water down the best option into something that pleases no one but is accepted by everyone.

These criticisms highlight the need for great intentionality within the research process and good rationale for its use. Adler and Ziglio (1996) suggest three questions to ask prior to use of the Delphi method. First, what kind of communication is needed by the group to ensure positive research outcomes? Who are the experts on the issue and where are they located? And, what alternative methods could be used to obtain the desired outcome and how do they compare to the outcomes of a Delphi? They argue that if these three questions are not address, the Delphi may be applied in error and research outcomes may be compromised.

Building upon this criteria, Stitt-Gohdes and Crews (2004) identify the Delphi technique is usually applied because one or more of the following issues exist: The questions do not lend themselves to other qualitative or quantitative methods; judgment, toward consensus, by a given group is desired; it is not possible to have the sample in the same place for face-to-face communication due to time and/or money; more individuals are needed then are possible to have in face-to-face communication; or, the issue is so contentious that

anonymity and seclusion are needed. Ensuring these questions and criteria have first been addressed should ensure the Delphi method has been applied appropriately.

4.7.2 Rationale for Use of the Delphi Technique

Here the Delphi technique was applied because experts lived in several different countries; practical limitations of time and money were a concern; experts were from various academic and professional backgrounds (i.e. social marketing; tourism; and water management), this technique allows for easy cross disciplinary collaboration; and, other methods such as focus groups or interviews may not give the desired outcome of consensus building which was desirable to the current project.

Similar work has been conducted by Johnson, *et al.,* (2009) whom applied the Delphi method as their first stage of research. They used the Delphi method to solicit theory which panel members felt were most important in developing social marketing initiatives for primary prevention of skin cancer among adolescents and young adults. These theories were then used to create social marketing initiatives and obtain agreement on their impact. In Jones, *et al.* (2014) these initiatives were expanded upon, using co-creation with groups of young people to create and test potential initiatives. This research is unique in that it started by creating initiatives with downstream (guests) and midstream (businesses) stakeholders, later using the Delphi method to evaluate and prioritize them. Both efforts followed the recommendations of McKenzie-Mohr and Smith (1999), incorporating those stakeholders most affected by initiatives into the process to increase the possibility of success. However, the current

research used the Delphi method in a fundamentally different role. This, again, highlights the unique application of the Delphi method by this research project.

To provide a clear execution of the Delphi technique, this research followed the recommendations of Garrod and Fyall (2005). These recommendations were selected because it is specific to the field of tourism, provides a clear definition and was created through a review of the literature, instead of just one example. Garrod and Fyall (2005) recommend fourteen basic steps to carrying out a Delphi consultation as seen in Table 4.4. Each step leads to the next, building towards a judgement to solve the issues being addressed. This recommendation uses the structural modelling technique to build and identify consensus. This is accomplished through multiple stages of sending questionnaires which are constantly updated to incorporate previous responses. A summary of responses are sent to each member between rounds and the questionnaires are stopped once consensus on the issue, or multiple issues, are found.

Here, ten potential initiatives aiming to promote water efficiency within the tourism industry were realized through the first three stages. A Delphi consultation was then conducted to evaluate the effectiveness of each initiative to change behaviour; rank potential initiatives in order of priority for implementation; and, to measure the factors used by panellist to prioritize implementation. In this way, the structural model Delphi method, following the recommendations of Garrod and Fyall (2005), were applied in a novel manner to critique findings from previous stages through consensus with a wide stakeholder group.

Table 4.4: Basic Steps of the Delphi Method for Tourism Studies.

1.	Choose the members of the coordinating group
2.	Develop criteria for evaluating potential candidates for the expert panel
3.	Identify potential candidates, perhaps on the basis of a review of literature/professional association
4.	Request their participation (perhaps through a prestigious person)
5.	Finalize panel composition
6.	Identify issues to be considered and develop the initial (scoping) questionnaire
7.	Send the first questionnaire
8.	Collate the responses
9.	Develop the second (convergence) questionnaire, incorporating all new input; perhaps using a numerical scale or ranking system to calibrate responses
10.	Send the second questionnaire
11.	Collage the responses
12.	Undertake further iterations as necessary (perhaps until an acceptable level of convergence is achieved)
13.	Send summary results to all respondents
14.	Apply the judgement(s) to solve the problem(s) being addressed through Delphi study

Source: Garrod and Fyall (2005, p. 87).

4.7.3 Sample- Stage Four

There has been some debate as to the merits of using a homogeneous versus a heterogeneous sample in Delphi consultations (Diamond, *et al.*, 2014). This research followed the recommendation of Powe (2003) who found heterogeneous samples provide a richer data set. The initial sample of experts consisted of experts in the fields of tourism, tourism accommodation management, water management and social marketing. Such a heterogeneous sample was selected because the current research has a multidisciplinary focus and as such a variety of respondents added their expertise to each area. These individuals were selected by convenience and based on their expertise and ability to contribute meaningful content to this stage of the research. Following the suggestions of Gibbs, Graves and Bernas (2001), experts were selected if they: published papers on the subject in the past five years in academic

journals; taught University level courses on the subject; or, it was a primary function of their professional career. Members of the group were anonymous during the event and email was the main form of communication. Delphi consultations have been conducted with as few as 4 and as many as 904 participants (Smith, 1995). It was anticipated that participants would drop out of the exercise over time and therefore a final sample of 15-20 individuals was expected, the sample size recommended by Young, Keng and Leng (1989).

In this research, on the 26th of January, 2016 a primary questionnaire was sent to and completed by 21 participating panel member. The amount of agreement was determined and a second questionnaire was created. The second questionnaire presented results from the first round, including all comments, mean scores and weighted averages. This second questionnaire was then sent on the 10th of February, 2016 and an increased and an acceptable level of convergence was achieved and thus the consultation was discontinued (examined in detail in Chapter 7). During this round 19 members completed the survey. Table 4.5 presents the Delphi panel and their title for reference. While many members of the original panel of 21 participants assumed several professional roles, roughly they can be categorized as: academics specializing in tourism or water issues (5); consultants in water or sustainable tourism (2); social marketing professionals (5); governmental water or tourism professionals (2); directors of water efficiency or sustainable tourism non-profit organizations (2); tourism accommodation managers (4); and, professionals with experience in social marketing, tourism or water efficiency from the local water company, South West Water (3). If viewed by area of specialty the panel could be divided into experts in water (7); tourism (9); and

social marketing (5). Again, many individuals were experts in two or even three areas but this simplified analysis provides a general overview.

Table 4.5: List of Delphi Panel Members.

Participants' Names	Brief Title	Round One	Round Two
Participant A	Author and Consultant in Social Marketing	X	X
Participant B	Consultant of Applying Social Marketing in the South West England Tourism Industry	X	X
Participant C	Tourism Accommodation Manager	X	X
Participant D	Tourism Accommodation Manager	X	X
Participant E	Special Projects Manager, Social Marketing and Water Liaison	X	X
Participant F	University Lecturer of Marketing; Research Including Investigations of Water Issues with Water Companies	X	X
Participant G	Business Development Manager at South West Water, Including Working on Water Efficiency in Tourism Accommodation	X	X
Participant H	Business Development Water Consultant	X	X
Participant I	South West Water Environmental Projects	X	X
Participant J	University, Senior Research Fellow, Researching Water Use	X	X
Participant K	Tourism Accommodation Manager	X	X
Participant L	Founder of a the Social Marketing Firm	X	X
Participant M	Tourism Accommodation Manager	X	X
Participant N	University Professor of Tourism Accommodation Management	X	X
Participant O	Director of a Social Marketing Firm	X	X
Participant P	University Lecturer in Management, Tourism	X	X
Participant Q	University Lecturer in Management, Tourism	X	X
Participant R	Director of a Non-profit Water Efficiency Advocacy Group	X	X
Participant S	Principal at Ofwat & Director of Research and Delivery at a Non-profit Water Efficiency Advocacy Group	X	X
Participant T	Co-founder of a Green Tourism Certification Scheme	X	
Participant U	National Parks, Manager of Sustainable Tourism	X	

Source: Author.

4.7.4 Survey Instrument- Stage Four

Questions for the Delphi were created through interpretation of data from the previous stages of this research. To review, ideas for social marketing

initiatives were generated in Stage One and Two, by accommodation managers and used in Stage Three to solicit responses from guests on how such initiatives may affect their experiences. Ideas most likely to be implemented by tourism accommodation managers, and with minimal impact to guests, were highlighted. Ten potential initiatives emerged were five aimed to change guest behaviour and five aimed to change manager behaviour. Specifically, the Delphi consultation evaluated the effectiveness of each initiative; ranked potential initiatives in order of priority for implementation; and, measured the factors used by panellist to prioritize them. Questions for the second round of the Delphi survey were based on responses from the first round. Appendix 6 presents the first round of the Delphi survey for reference.

4.7.5 Data Analysis- Stage Four

Measurement of the effectiveness of each initiative and the factors used by panellist to prioritize initiatives were scored on five point Likert scales. Ranking initiatives for priority was measured on a weighted rank score corresponding to each individual panellists' response. A weighted score is calculated by assigning a value to a ranking (e.g. 10 for ranking an item first; 9 for ranking an item second; etc.) for each individual ranking event and then adding those sums to give the item a weighted score. Then all weighted scores are compared to determine which were ranked highest, most often. When viewing the ten initiatives, panel members were presented with results from previous stages of the research to ensure they had all available information concerning the initiatives when completing the survey. Between rounds, both quantitative and qualitative responses from participants were provided to the panel to compare

their response to that of their peers'. Two rounds of surveying were conducted, at which time consensus, determined through both qualitative and quantitative analysis of panel responses, was reached and the Delphi was discontinued.

Diamond, *et al.* (2014) reported no agreement within the literature on the procedure for determining consensus in a Delphi study. Instead, they identified several different approaches including level of agreement, interquartile range, decrease in variance, stability between rounds and central tendency within a range. These variations may exist due to the varying type, length and nature of questions being asked in different Delphi studies (Morakabati, 2007). Here, an interquartile range of 1 or less was used for determining consensus on the impact of each initiative and factors used to rank initiates as recommended by Raskin (1994). Interquartile range was justified for this purpose as it measures the difference between the values recorded at the 25^{th} and 75^{th} percentile, explaining the dispersion between data points and ensuring no large discrepancies in responses were present. To further ensure no large discrepancies existed, all data was checked for normal distribution as bimodal responses would represent distinct groups of disagreement, indicating a lack of consensus (Diamond, *et al*., 2014). The metrics of percent agree and disagree were used to determine direction of consensus. Additionally, qualitative data was collected for each section and the general nature of comments (positive, negative or mixed) for each question aided in determining the direction of consensus. This application of qualitative analysis in a Delphi study is similar to work by Holey, Feeley, Dixon and Wittaker (2007). While some researchers (i.e. Johnson, *et al.*, 2009) exclusively used quantitative data to determine consensus in similar research, the triangulation of both quantitative and

qualitative data applied in this research was determined to provide a more encompassing understanding of panel members' responses.

Since ranking initiatives was performed on a 10 point scale, interquartile range was not determined to be appropriate as no precedent for such a wide scale could be found in the literature (Diamond, *et al.*, 2014). Instead stability of weighted scores between rounds was used to determine consensus. Again, qualitative data was collected to confirm quantitative findings.

4.8 Reliability of the Data

Data collected in each of the four stages presents different challenges to ensure reliability. In Stage One while the convenience sample of managers could be considered a limitation, the length and breathe of data collection minimized this concern. Again, the stage represented the end of a five year study with over 50 case studies. Much of the data was based on observation and recording of electricity and water bills over that time reducing the need to solely rely on manager interpretation.

The second stages relied on a convenience sampling, guided through the process of stratification, as seen Table 4.2. This method for stratification was determined through research that suggested the variables of size and type of an accommodation affected their environmental efforts (e.g. Yaman and Gurel, 2006; Frey and George, 2010; Carmona-Moreno, Céspedes-Lorente and De Burgos-Jiménez, 2004; O'Neill, *et al.*, 2002). However, convenient sampling is never considered random and is a limitation in the current research.

Data in the first two stages with tourism managers was collected in South West England and is therefore appropriate for understanding tourism trends and patterns in this region alone. Due to the cross-sectional nature of the data, caution is needed to extrapolate findings to other geographical regions and throughout time. In Stage Three, a paid internet panel was used to sample guests. Potential limitations are related to response bias with regard to validity and reliability. Validity is concerned with if the instrument truly measures what it aims to measure and reliability is the stability of responses across repeated measurement between varying groups and times. Respondent on this panel were from a 'non-probability' online panel, meaning they are self-selected and voluntarily join. They were then sorted into panels based on their demographic information to comprise a sample that is similar to the national census. Callegraro, *et al.* (2015) review the literature on this topic, finding a lack of reliability from this sampling method but also site a low number of studies on the topic. They conclude that in 'non-probability' internet panels, relationship and correlations among variables do not suffer, as they are considered robust, yet the signs of coefficients can be in different directions and the strength of relationship can vary across samples. To correct for these issues some researchers have begun weighting (post-stratification on demographics) online panel data. However, as Callegaro, *et al.* (2015, p.210) find weighting results is 'very controversial' and in need of further study. As such weighting was not performed on this data set.

Other concerns with online panels include professional respondents; speeders and attrition. Professional respondents are defined as experienced survey takers that complete large numbers of questionnaires, usually for rewards (Baker, *et al.*, 2010). Hillygus, Jackson and Young (2014) find

reliability from professional respondents as high quality at times and low quality at others and conclude more research is needed. Speeders are respondents that move quickly though a survey to complete it as fast as possible. Callegraro, *et al.* (2015) find the effect on data from this type of respondent to be low. Finally, attrition (when respondents drop out of a survey) is a concern because it is never random and may leave the panel without representative demographics (Lugtig, Das and Scherpenzeel, 2014). This is a concern in all survey methods and more so in longitudinal studies Callegraro, *et al.* (2015). In a 'non-probability' panel, as was used here, if a member drops out of the survey another from the randomly selected larger group fills their place.

To reduce these concerns Callegaro, *et al.* (2015) recommend using an internet panel company that is certified by a third party and keeping the survey instrument as brief as possible. Here SmartSurvey partner Cint administered and formed the internet panel. Clint holds the ISO 20252 certification from the third part group European Society for Opinion and Marketing Research (Cint, 2015). Clint also reports a transparent selection process for panel members.

Specific to the questionnaire, concerns over the use of reported behaviour compared to actual behaviour is well documented and has been referred to as the value-action gap (Kollmuss and Agyeman, 2002; March and Woodside, 2005; Whitmarsh and O'Neill, 2010). One issue arising here, is that many of the questions lent themselves to surveying individuals' values and not necessarily actions. To partially offset this concern, surveying focused on both attitudes and actions. In some instances analysis of variance was also used to determine if attitudes had a significant effect on reported behaviours to better understand the link between values and actions. Additionally, in respect to recording both attitudes and behaviours, Kollmuss and Agyeman (2002) find,

‘the research on community-based social marketing indicates that the approach has been successful in transcending the gap between knowledge to action that has characterized many local environmental and sustainability projects to date’ (p.240). However, while efforts were made to alleviate these concerns, they are acknowledged here.

Finally, criticisms of the Delphi method were reviewed previously within this chapter. Specifically, the selection of the panel and interpretation of consensus both present limitations for this research. While best practices have been followed in this current research effort, these issues are acknowledged.

4.9 Ethical Considerations

Ethics approval was granted for this project through the University of Exeter research ethics review process. Specifically, to respect the autonomy of participants in the focus groups, semi-structured interviews and Delphi panel, all participants signed consent forms explaining their confidentiality and the purpose of the research. Additionally, to address ethical concerns of online surveying, it was confirmed that the third party market research firm SmartSurvey and their partner Cint have strict ethical protocol. This protocol has been approved by the University of Exeter and Cint has agreed to the ethical protocol for sampling put forth by the University of Exeter. All data was stored on a University of Exeter issued computer and encrypted to ensure security where it will be stored for 5 years from collection and at that time destroyed. Finally, in order to protect the intellectual property between the researcher and the business partner, South West Water, a non-disclosure agreement was signed by all parties.

Chapter Five- Results: Manager Focus Groups and Interviews

5.1 Introduction

This chapter presents the results of Stage One and Two of the research. Results from both stages are presented together due to their overlapping themes. The chapter aims to address the first objective of this research, namely investigating how tourism accommodation businesses manage water. Findings were used to inform later sections of the thesis to better understand the needs and abilities of businesses within the social marketing process. To accomplish this, three focus groups with tourism accommodation managers were conducted. First, the extent to which managers' value water was examined (research question 1.1). Next, the reported barriers and drivers of managing water efficiently are presented (research question 1.2). Building upon these results, outcomes from the semi-structured interviews are presented. This is followed by the viability of initiatives aiming to change guest behaviour, identified within the literature, within participating businesses are described (research question 1.3). Additionally, new ideas or current practices not previously investigated in past research are explained (research question 1.4). The chapter concludes by explaining how results were used to inform the efforts in Stage Three, the guest questionnaire.

5.2 Focus Groups

Three focus groups were conducted in the autumn of 2014, throughout South West England, with 20 managers and owners of 16 tourism businesses. The size and type of businesses varied but included hotels, bed-and-breakfasts, self-catering and group accommodation providers. These businesses were SMTEs and findings from this stage have been previously published in Coles, *et al.* (2016) on environmental management and business models. The results most pertinent to the current research follow, including how tourism businesses' manage water; barriers to changing water management practices; and, how results informed the semi-structured interviews in Stage Two.

The focus groups broadly examined how environmental costs are considered and managed by tourism businesses. While discussion involved both electricity and water, here, only those results pertaining to water are presented to remain focused on the research aim. Table 5.1 is presented to provide participants details.

5.2.1 Water Management in Accommodation

Managers reported low levels of effort to manage costs from water (and electricity) as it was viewed as secondary to revenue generation through bookings. Generating revenue was continuously stated as the primary focus of the business , as seen in this quote from one participant: ‘‘We should be more concerned with costs but you know if I haven't got the guests there then why haven't I got the guests there?' (P4). While managers appeared fixated on the need to secure more bookings, controlling costs from resource use (such as

water) was seen as secondary but still of concern. As this participant acknowledged,

> 'You've got to be able to balance the books at the end of the year and…part of what we're looking at here is making the business more sustainable by investing now for the future. You're driving costs down. Trying to remain competitive. Ummm and in the current market you'll use any which way you can…' (E6A) (Coles, *et al.*, 2016, p. 13).

Table 5.1: Key Characteristics of Businesses Participating in the Focus Groups.

Business *	Bedspaces/ Bedrooms	Annual % occupancy	Sub-sector/type	Quality Rating	GTBS level †	Setting ‡	Water (litres per bednight)◦
E1	12/6	54	Self-catering	-	-	R	Un
E2	20/10	30	Self-catering	-	(Gold)	R	Un
E3[2]	32/16	71	Self-catering	5	Gold	R	Un
E4[2]	8/4	35	B&B	5	Gold	R	158
E5	6/3	39	B&B	4	-	C	Un
E6[2]	12/6	49	Hotel	5	Silver	U	238
P1	**	**	**	**	-	C	-
P2	12/6	39	Hotel	3	-	C	203
P3	173/84	**	Hotel	4	-	C	437
P4	8/4	55	Self-catering	4	Silver	R	161
P5	11/6	76	Guest House	3	-	C	-
P6	70/**	**	Self-catering	**	-	C	-
S1[2]	4/2	40	B&B	3	-	R	132
S2	**/**	**	**	**	-	R	-
S3	16/8	58	Hotel	4	-	R	570
S4	18/7	44	B&B	4	-	C	154

* Letter denotes venue: E –Exeter, P – Poole, S – Sherbourne.
** Not able to divulge
[2] Two representatives from business participated in group (A,B in text)
† bracket denotes formerly
‡ C – Coastal, R – Rural, U – Urban
◦ Unmetered, so no data
Source: Adapted from *Coles, et al.* (2016, n.p.).

5.2.2 Barriers to Changing Operations

One reason provided for low management of water costs was lower prices compared to other operating costs. Participants explained that cost related to rising food and beverage prices, mortgage interest payments, labour, and other loans were much higher priority. One manager explicitly stated if water prices were higher, they would be of greater concern: 'So I think, unless you're very environmentally-aware and conscious and active… the problem, frankly, is unless electricity or gas or oil or water prices going up then the people really, really won't take notice' (S4). Additionally, water was seen as a lower priority than electricity. This was due to much higher electricity prices as one stated, 'we've all got electricity so a huge issue and a huge problem and the cost of the electricity is just massive…' (E3A) (Coles, *et al.*, 2016, p. 116). Additionally, when managers thought of water, they commonly associated water use with electricity, 'Well when we think water, we think about energy' (E2A). This further highlights the low priority placed on water.

Managers explained a substantial reasons water was of low priority, was the belief they had little control over costs and usage. Costs were considered fixed as distribution, at the time of this research, was limited to only their regional providers, leaving businesses no choice but to pay their water company's prices. As one manager stated, 'If you, if you don't like the price that South West Water offer you, what are you going to do?' (E5). Another manager added:

> I think because we don't have the control, it's not just me ringing up the water company and saying set my water supply because they are not interested and ignore me. Therefore you don't have any power, what's the point of worrying when there are so many other things to worry about? (P5).

Concerns specific to South West Water not fixing leaks, leading to wasted resources, were also expressed, with one participant stating:

> 'Isn't the biggest issue though in the South West is not how much water we use, it's how much water South West Water waste. You really feel with the water it's like peeing in the sea with the tide coming in. What we gonna do ain't gonna make any difference at all until South West Water get their house in order' (E4).

Blame for a lack of control for water usage was also placed on the media. Here, some managers suggested the media played a role in influencing public perception of water management and availability. That is, they suggested the constant focus on rain and sensationalism of weather patterns aided in reducing a concern for saving water among their guests. As one manager reported:

> I don't think the media help…to be honest. The media whip up storms in the night… I just don't think, as I say, that the media help the situation at all here. And you think, you talked about South Africa and the water and stuff there and people have to walk miles to go and get their water and bits and pieces and, and whatever and we're all very lucky that we rely on to turn on the tap and it works (S4).

Managers also felt usage was out of their control as guests were able to use as much as they pleased. One participant explained: 'And you watch the volume of water they are using every time - as well as the inconvenience [in introducing water-saving measures], obviously – and you're thinking well, why are we trying to save a few cupfuls of water here and there…' (E6) (Coles, *et al.*, 2016, p. 15). At times, managers appeared angry with some guests with one describing a particular guest,

> ‘ …She comes, she comes and she says “oh, I’m so glad I’m here. I can have my half-hour showers”. And she drains the tank every time… and she… you know… she makes a thing of this at breakfast. “Oh, I was in the shower for half an hour and I had hot water”. Do you need a half-hour shower?’ (S4) (Coles, *et al.*, 2016, p. 18).

Managers explained this overuse of water was, in their opinion, due to the guests’ belief that water is ‘free.’ One participant summed it up by reporting, ‘guests don’t consider your costs, period.’ (P2). When asked if behaviours could be changed, managers showed doubt. One manager explained, ‘it is a me, me, me clientele that you’re talking about. Why should they consider you when you’re supposed to be offering them a service?’ (S4) (Coles, *et al.*, 2016, p. 17). Another stated,

> ‘YES, we’d all like to save, for guests to save more water, but really most, the main reason people come to stay is for the luxury and the things that they don’t do at home… and we certainly say the same… I don’t want to compromise the guests having a trickle in the shower [umm] because you’re trying to save water’ (E3A) (Coles, *et al.*, 2016, p. 20).

This was followed by concern that such efforts could cause guest backlash. Specifically, one participant stated, ‘you know they do threaten you all the time with Tripadvisor…you know, all the time…that site’s a nightmare’ (S3) (Coles, *et al.*, 2016, p.17). This fear of guest reprisal was so high that some participants had started to change how they manage water.

Several participants explained a strategy of avoidance with guests. That is, where the business takes on all responsibility for saving water and avoids engaging the guest in water saving initiatives. This statement summarizes the strategy:

> ‘I think it’s down to us, the back of house side to say, you know, it’s making sure your machines are efficient and that, you know, making sure your washing machines are full and so…so you’re not actually wasting water there but I don’t think you can compromise the guests’ [experience]…’ (E3A) (Coles, *et al.*, 2016, p. 21).

This strategy had lead several managers to invest more in technological fixes. Specifically, water saving devices and solar water heaters. As reported by one manager, ‘I suppose I don’t consider myself a control freak but I do take a lot of responsibility on [my] shoulders to make sure we are not wasting the resources by buying more water efficient appliances and devices‘ (P2). Though managers also acknowledged hesitation to promote their efforts publicly. This was due to the fear that guests may see efficiency as more expensive. In other words, managers were concerned guests may think they were raising costs and passing them on to them for the benefit of the environment. This was expressed by one manager’s comment, ‘the very first thing people think of if you advertise as a green business – it’s going to be expensive’ (E2).

Managers were generally interested in finding solutions to the issue of engaging guests without disrupting their experience. However, they were sceptical of potential impacts to the guest experience, as this quote explains: ‘It’s a real fine line to get that balance between “actually, you’re just trying to save money, you’re trying to rip me off, I’ve paid for it” versus ‘I understand what you’re doing and why you’re trying to do it’” (S3) (Coles, *et al.*, 2016, p. 22).

5.2.3 Section Summary

Businesses explained their number one priority was revenue generation, by increasing bookings, and cutting costs was a much lower need. Within cutting costs, saving water ranked very low, even lower than saving electricity. This was in part due to relatively low water bills and a feeling of costs and usage being out of their control. This lack of control was attributed to fixed rates by the local water company, having no option in water provider, media shaping public perception of local water availability and guests' ability to use as much water as they liked. Water use by guests was perceived as abundant and engrained in the idea that water is 'free.' Several businesses had adopted a strategy of avoidance, buying water saving devices and not engaging with guests about usage. This was mainly due to fear of disrupting the guest experience and potential reprisal through negative online feedback. However, interest in finding initiatives that did not disrupt the guest experience was expressed.

From the focus groups, a picture began to emerge of SMTEs' water management efforts. However, a desire to reaffirm the data and elaborate on certain issues led to conducting later interviews. For example, while the strategy of avoidance was well documented, more information on how past efforts to change guest behaviour could be applied in tourism accommodation in the South West was needed to understand if such initiatives may be effective. Additionally, new ideas for engaging guests may exist that have not yet been examined in the literature. As these issues were unresolved, more sampling of tourism accommodation managers was conducted to fill these gaps in knowledge.

5.3 Semi-Structured Interviews

In order to further examine potential initiatives for changing guest behaviour, semi-structured interviews were conducted with 16 tourism accommodation managers. Table 5.2 presents important information concerning each manager. The sample consisted of hotels (3); B&Bs (3); self-catering (7) and tent/caravan (2) accommodation. This distribution is similar to the South West Water customer data presented in Chapter Four. Also similar to the region (according to Coles, Merchant and Nankervis, 2013) the sample was dominated by micro business (13), few small businesses (2) and one medium sized business. Of these businesses, six marketed themselves as luxury while ten did not.

Additionally, half (8) of the accommodations were enrolled in the Green Tourism Business Scheme (GTBS), an accreditation scheme that encourages environmental conservation through self-monitoring of water and energy consumption and other 'green' efforts to reaching benchmarks established by the organization. Labels representing each business have been used to preserve anonymity.

Interviews aimed to better understand opportunities for promoting water efficiency. First, the drivers for behaviour were discussed to build upon results in Stage One. Next, discussion focused on barriers to behaviour. Then managers were asked if initiatives, identified in the literature and in previous interviews, would be viable within their operations. Finally, managers explained or created new ideas targeting guests and managers, not previously discussed.

Table 5.2: Key Characteristics of Businesses Participating in the Semi-Structured Interviews.

Business	Date	Type of Accommodation Represented	Size of Accommodation	Marketed as Luxury	Certified Through GTBS	Star Rating
T1	25th March, 2015	Tent/Caravan	Micro	No	Yes (gold)	N/A
H1	26th March, 2015	Hotel	Small	No	No	3
H2	26th March, 2015	Hotel	Micro	No	Yes	N/A
SC1	27th March, 2015	Self-catering	Micro	No	No	N/A
BB1	30th March, 2015	B&B	Micro	No	No	N/A
SC2	30th March, 2015	Self-catering	Micro	Yes	Yes (gold)	5
SC3	30th March, 2015	Self-catering	Micro	Yes	No	4
SC4	30th March, 2015	Self-catering	Micro	Yes	Yes	5
SC5	30th March, 2015	Self-catering	Micro	Yes	Yes	5
T2	1st April, 2015	Tent/Caravan	Small	No	No	N/A
SC6	1st April, 2015	Self-catering	Micro	Yes	No	N/A
SC7	1st April, 2015	Self-catering	Micro	No	No	N/A
SC8	1st April, 2015	Self-catering	Micro	Yes	No	4
BB2	2nd April, 2015	B&B	Micro	Yes	Yes	N/A
BB3	8th April, 2015	B&B	Micro	No	No	3
H3	10th April, 2015	Hotel	Medium	No	No	3-4

Source: Author.

5.3.1 Drivers for Behaviour

When asked who was ultimately responsible for reducing water use in tourism accommodation, overwhelmingly managers identified themselves. Business responded:

> 'It has to be the owners. The advocates can do all they want but it comes down to us (SC1).'

> 'As far as the front line it needs to be the owners and managers of the accommodation (T2).'

> 'I don't think guests would really have responsibility, when they pay it's an all-inclusive deal so I wouldn't put it on them. I think we need to change it from the accommodation point of view (H2).'

Some managers also acknowledged a broader spectrum of stakeholders such as the local water company, government, tourism burrows and guests. However, managers self-identified as the primary stakeholder responsible for water efficiency. They most commonly reported their environmental attitude was the greatest driver for action. As one manager simply stated, 'it is the right thing to do (H3).' Other drivers included: recognition from an outside examiner or peer group; full-filling the requirements of their certification schemes; customers' expectations; and, cost savings. Other, less frequent responses included previous experience with the product; if it were free; and a peer showing them it works. These findings suggest that the primary drivers for SMTEs are more focused on personal reasons such as their environmental attitude and social capital then financial gains. As one business explained, 'I

have always wanted my properties to reflect my personal views on these things. If I waited for everyone else, it would never happen' (SC1).

5.3.2 Barriers to Behaviour

Managers were also asked about the barriers to implementing general water efforts. They strongly agreed that guest satisfaction was the number one barrier with managers stating:

> 'No, for me that is just too penny pinching. I guess it depends on the type of experience you are trying to promote but I think here that wouldn't go down well at all (BB3).'

> 'If it was something that saved water but made the guest experience worse, frankly we wouldn't be doing it. When we focus on water we very much focus on how to help the environment without giving them a worse holiday (SC4).'

> 'You need something that makes their experience better, saves water and saves us money if you want it to be successful (SC2).'

This was reinforced by a clear fear of guest complaints. This issue was also prominent in the focus groups with attention raised toward the shift of power to guests through online websites such as TripAdvisor and reiterated during the interviews with one respondent suggesting, 'we need a GuestAdvisor' (SC3). This overwhelming fear of the guest may also explain the consistent response of managers to identify as the primary stakeholders. Said another way, if the guests experience is non-negotiable then the responsibility may be the managers' exclusively.

Costs were the second most frequent response. Interestingly these costs were focused on upfront payment and not payback periods. Additionally, costs were a higher concern then potential savings. This may indicate that using the theory of 'loss aversion' (that individuals would rather not lose something then gain something of the same value) could be used to motivate managers. Other barriers of note were a belief that the managers had already implemented all possible interventions, lack of trust in suppliers and information distributors, a desire to keep messaging at a minimum to not overwhelm guests and limitations in their facilities.

5.3.3 Previous Research Efforts

Managers were asked how previous initiatives to promote water efficiency, identified and described within the academic research (reviewed in Chapter Three), could be implemented into their operations. Specifically, money-off vouchers (Shang, *et al.*, 2010), donations to charity (Shang, *et al.*, 2010), pubic commitments (Baca-Motes, *et al.*, 2013), implementation of technologies and messaging to guests (e.g. Glodstein, *et al*., 2008; Shultz, *et al.*, 2008; Blose, *et al*., 2015) were discussed. All participants concedeed that they had no prior knowledge of such efforts. However, interest in seeing results was strong with responses such as:

> 'Yes, we would be very interested in seeing the messaging research and are currently doing only verbal requests. We have been thinking about messaging because our costs are high (BB1).'

> ‘As I studied psychology in school I would be very interested in the research but am surprised I have not heard of it prior (SC3).’

> ‘No, but I think it is something I should definitely see. I think there is a particular skill in putting that wording together and we would be very interested in seeing information on that (H3).’

Additionally, managers reported many of the initiatives appeared too complex for their businesses, especially those seen as requiring more investment such as providing donations and money-off vouchers. Specifically, managers stated they did not have the capacity or staff to create and follow through with such programs. The initiative of asking for commitments was met with concern, as previously identified, with fear of negatively influencing the guest experience was sighted frequently. Again the guest experience and costs were identified for implementing new technologies, though varied in severity from technology to technology.

Alternatively, messages asking guests to use less water as an intervention had the highest degree of interest, even above technology implementation. When asked why, one participant responded, ‘they sound very subtle but effective. Doesn’t sound intrusive at all but could have a big change (T2).’ However, managers were uneasy with the nature of messaging previously tested with one manager stating, ‘that sounds too boring, we need something more fun, they are on holiday after all (SC7).’ They also cautioned about the tone, length and amount of messaging, stating:

> ‘We work really hard for them so they don’t need to worry about it. We aren’t expecting them to come on a week-long environmental lecture (SC2).’

> ‘It is about focusing on the do’s and not the don’ts. You have to engage with guests (SC1).’

This prompted a conversation of how messages may be improved to fit conditions specific to their operations and are presented in the next section.

5.3.4 New Ideas to Target Guest Behaviour

After reviewing past efforts managers were asked to offer solutions to reduce water use in tourism accommodation that they perceived had not been previously researched and discussed. Since interviews were completed at different times, they were also presented with the previous ideas created by managers in prior interviews and asked to comment on them. In this way the later interviews were able to have a process of review, and in some cases recommended enhancements, of peer-created ideas. Perhaps not surprisingly these newly created ideas were generally endorsed by fellow managers. Whether this was due to a desire to conform and follow their peer group or because the ideas are more feasible was not clear. However, several managers explained that the ideas seemed low impact on the guest experience, low investment and could possibly save large amounts of water. Below are three of their most collectively supported ideas after this process:

- **Initial Welcome Introduction:** While engaging guests on their initial walk through of the premises, staff briefly (5-15 minutes) highlight environmental efforts in addition to the original pertinent information to show guests they are making an effort and hope guests follow suit. For example, while showing off the bathroom, the popularity of the towel reuse program and the water saving shower heads would be emphasised.
- **Feedback Cards:** Cards located in guest rooms asking for additional ideas for saving water (and other environmental efforts) in the accommodation. This initiative would engage guests in the creation of solutions and may encourage them to use resources more efficiently if they are part of the 'solution.'
- **Child Focused Messaging:** Signs asking guests to use only the water they need directed towards children with the hope they will in turn influence their parents. This could also ensure the tone of the messages are more appropriate to the holiday experience.

5.3.5 Ideas to Target Manager Behaviour

Managers also offered three ideas for initiatives to encourage other businesses to save water. Similar to initiatives to change guest behaviour, these ideas were interconnected with the drivers and barriers previously explored in this chapter. The first idea was to increase incentives for green tourism business certification schemes. Several participants in these interviews held certification from the Green Tourism Business Scheme (GTBS) and were able to leverage their experiences. A general feeling emerged that green accreditations

schemes, among those business with pre-existing accreditations, had little value in generating bookings. As this manager explained, 'I thought they were booking because of the unique green credentials but the bottom line is they have booked because of the luxury' (SC4). This same sentiment was common with another manager saying:

> 'I've never got the impression that our Green Tourism Business Scheme award was a factor in people booking with us, or that it affected their behaviour while here. We originally did it because it was something I wanted to do anyway, and at the time I believed that it might help to bring in guests that cared about the environment, and perhaps that the steps we had taken might inspire our guests in general to change their habits in a small way (at least while they were with us). But having had the award for several years we have not once had a guest say that they chose us because of our green credentials'(SC3).

Building upon this feeling that certification schemes had little value, one manager went so far as to recommend some changes to certification schemes to provide a better service to businesses:

> 'The GTBS doesn't offer much and you don't get much in return but they want a lot like promoting them and doing all the monitoring. I don't think they have ever brought us a booking. They authenticate us so there is something that they bring us but that's it. They could be doing a lot more like providing us with a huge database for marketing. If I were GTBS I would say in exchange for our database of potential customers you need do some serious green efforts- increasing biodiversity, energy and water conservation, etc and then you give access to the database. And the database should be from diverse areas and not just mine, we are self-catering no one from here is going to stay with us from here. You have to get something back. But when it is doing something for free, its' just too much' (SC6).

A second issue raised by some managers was a lack of understanding of how much water they were using. One manager commented, 'South West Water charging at a cubic meter of water instead of a lower amount. In that context, a long shower here and there is insignificant' (SC1). Another manager added, it is important to 'understand how much you are using. It is hard with water as the units don't mean much' (H3). Instead, a change in the units of measurement was offered, 'They could charge by a smaller increment and it would be more visible to the bottom line' (SC1).

The third idea offered by managers was a green ambassador scheme. Green ambassadors would hold open houses to show off their efforts and be contacts for asking relevant questions about efficiency managing water for other managers. One enthusiastic manager exclaimed, 'being an ambassador to others and sharing these experiences is something I would love to do more of' (SC6). This idea of increasing peer-to-peer communication was commonly promoted throughout interviews, and during the previous focus groups, as managers identified that it would avoid scepticism shown for retailers and information distributors.

Finally, two potential initiatives, not explicitly stated but potentially relevant to managers' stated barriers, are low interest loans and increased academic collaboration. With the second most stated barrier by managers being upfront costs, low interest loans could be a potential way to enable businesses to ease this concern. Another identified barriers was a lack of exposure to research findings. Every business interviewed stated they had no previous exposure to findings from academic research into how to change guest behaviour, however, every manager showed a great interest in learning more

about the topic. Therefore a potential initiative could be to increase academic research and collaboration in this field where researchers work directly with managers and distribute findings to those that could implement them in practice.

5.4 Informing the Guest Questionnaire

Each stage of the methods was designed to inform and build towards the next stage. Several important results from these two stages have implications for the guest questionnaire. Specifically, since managers identified the greatest barrier to implementing initiatives was negatively impacting the guest experience, any initiative presented to potential guests should explore the impact on their experience. Understanding this impact will ensure the initiative is more likely to be adopted by managers. Since those managers involved in green tourism schemes showed scepticism towards green schemes encouraging bookings, understanding how guests perceive green certifications is important to understanding how potential initiatives around this driver of manager behaviour is needed. Finally, managers explained the three initiatives targeting guests of feedback cards, initial welcome and child focused messages. Since these initiatives have not yet been identified within the literature on sustainable tourism, it is important to understand how they may affect the guest experience in relation to previously explored initiatives (e.g. messaging, donations to charity, money-off vouchers, etc.).

5.5 Chapter Summary

Three focus groups were conducted with 20 tourism accommodation managers, representing 16 businesses. Building upon results, 16 semi-structured interviews were conducted with different owner/managers of tourism accommodation. Important results include managers stating a low priority for managing water. For example, managers stated they valued water for the services they provided but did not strongly consider costs to the business. Consequently, they were more concerned with electricity than water management due to the lower cost of water. This contributed to better understanding research question 1.1 (the extent to which managers' value water). Managers also expressed unhappiness with, what they perceived, as an abundant use of water by guests. To address this, managers described a strategy of avoidance, preferring to manage it in the 'back-of-the-house.' This was in large part due to a fear of disrupting the guest experience. However, managers expressed a high interest in learning about initiatives that may be used to change guest behaviour.

Subsequent interviews were conducted to explore barriers and drivers of managing water (research question 1.2). Participants strongly agreed that disruption of the guest experience was the number one barrier to engaging in behaviour change initiatives. When asked the viability of past initiatives identified in the academic literature in their establishments (research question 1.3), managers stated they were not possible due to limitations such as potential disruption to the guest experience, financial costs and lack of staff and time. This may suggest initiatives need to be designed for the appropriate context (size, type and clientele) of the business. Instead they offered three

new initiatives (research question 1.4): environmental feedback cards, initial welcome introductions and child focused messaging.

Additionally, managers offered three initiatives to encourage their peers to manage water more efficiency: green business schemes with added incentives, more meaningful units of measurement and green ambassador schemes. Furthermore, other potential initiatives were realized through this process. Due to managers asserting upfront costs were a major barrier to initiatives, low interest loans may be a potential avenue for engaging managers in further investing in water efficient technologies. Finally, because every manager conceded that they had no prior knowledge of past academic research and results on behaviour change in tourism accommodation, a potential initiative to further promote efficient water management could be an increase in academic research focusing on collaboration and distribution of knowledge to practitioners. Ultimately, results from these two stages were identified for informing the guest questionnaire in Stage Three. Specifically, it provided new ideas to promote water efficient behaviour to be examined and the need to analysis these initiatives based on their impact to the guest experience.

Chapter Six- Results: Guest Questionnaire

6.1 Introduction

This chapter aims to provide a comprehensive analysis of the online guest questionnaire. The questionnaire was designed to address two of the project objectives. Specifically, this analysis examines behaviour among groups of water users (thesis Objective Two) and describe potential efforts to change water behaviour in tourism accommodation (thesis Objective Three).

The first section provides general descriptive characteristics of the sample. Section two examines water use behaviours in the home (research question 2.1). The third section examines water use behaviours and attitudes exhibited by guests in tourism accommodation (research question 2.2). While section four aims to describe differences between water use behaviour at home and in tourism accommodation (research question 2.3).

The final section is an investigation of the data through multivariate statistics. Cluster analysis is used to create 'life style' groups with regard to water behaviour in tourism accommodation (research question 2.4). A critical investigation of how potential initiatives are applied to these segments (research question 3.1 and 3.2) is presented. Finally, the location of messaging to best reach the guest is also investigated (research question 3.3).

6.2 Sample and Travel Characteristics

Table 6.1 examines selected characteristics of the sample. The sample had a larger percentage of females (57.1%) than the reported 51.8% by the 2011 UK census (UK Office for National Statistics, 2015). The 2011 UK census also reports 2.4 people per household in England and Wales while this sample average was 2.93. Additionally, Ofwat (2015) estimates that about 40% of households in England and Wales have water meters. This sample had a slightly higher amount (49.5%). Alternatively, the mean age of the sample was 38.3 was relatively close to the 2011 national average of 39 years old (UK Office for National Statistics, 2015). Other information in the sample characteristics could not be compared to the 2011 UK Census as the categories are not congruent. With regard to discrepancies, the third party sampling company states their panels are representative of the 2011 UK census (Cint, 2015). Thus the researcher is left to accept their claim while acknowledging potential bias in the sample.

Of note, seemingly, a low amount (4.4%) of youth (16-19 year olds) responded to the questionnaire. It should be acknowledged while this proportion appears low, it is also due to the sample being constricted to participants of 18 years and older (policy of the sampling company, Clint). Thus this category only contains 18-19 year olds and has been changed throughout the thesis to reflect this fact.

Information on participants' most recent travel and amount of time per year in tourism accommodation was also collected. Table 6.2 shows that just over half (50.2%) of participants last stayed in a hotel. During that stay a large amount (74.5%) were on holiday compared to other motivations for travel.

Table 6.1: Characteristics of the Sample.

Sample Characteristics	Value
Gender	
Male	42.9%
Female	57.1%
Age	
18-19	4.4%
20-24	10.3%
25-29	19.1%
30-34	15.7%
35-44	18.6%
45-59	19.6%
60-64	5.9%
65-74	5.4%
>74	1.0%
Mean age[b]	38.3
Total household income	
<£9,999	7.6%
£10,000-£19,999	18.6%
£20,000-£29,999	16.4%
£30,000-£39,999	18.6%
£40,000-£49,999	13.2%
£50,000-£74,999	12.7%
£75,000-£100,000	4.2%
>£100,000	2.2%
Prefer not to say	6.4%
Highest Educational Qualification	
GCSE/NVQ	25.5%
A/AS Level/GNVG	28.7%
Bachelor's Degree	30.4%
Master's	11.8%
Doctorate	3.7%
Average number of individuals in household	2.93
Households with children present	42.6%
Housing Situation	
Home owned outright	23.8%
Home owned with mortgage or loan	32.1%
Shared ownership	1.2%
Let from council	13.2%
Let from private landlord or letting agency	22.5%
Other	7.1%
Water meter status	
On a water meter	49.5%
Unmetered	48.3%
Has its own water supply	2.2%
Occupation	
Higher managerial, administrative or professional	9.1%
Intermediate managerial, administrative or professional	19.6%
Supervisory or clerical and junior managerial, administrative or professional	29.9%
Skilled manual worker	14.2%
Semi and unskilled manual worker	7.8%
Casual or non-worker	19.4%

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015).

Source: Author.

Most respondents last stayed in a hotel and for the purposes of a holiday. Of the seven water consumptive services investigated, the presence of a spa was least important and en-suite bathrooms were most important for guests' last booking. Respondents stated they stay in tourism accommodation per year for business/work on average of only 3.85 nights. This is in contrast to an average amount of nights stayed for holiday at 9.35 nights per year.

Table 6.2: Travel Characteristics of the Sample.

Characteristics	Value
Type of accommodation	
Hotel	50.2%
B&B	16.4%
Self-catering	11.8%
Campsite/ Caravan Park	21.6%
Motivation for travel[b]	
To visit friends and relatives	28.2%
Holiday	74.5%
Business or for work	7.1%
Mean score of services' importance on last booking*	
Swimming pool	2.53
En-suite bathroom	3.89
Spa	2.32
Separate shower and bath	2.87
Fresh linen daily	3.33
Fresh towel(s) daily	3.48
Luxury shower	2.9
Nights stayed in tourism accommodation per year for:	
Holiday	
0-5	33.8%
5-10	27.7%
10-15	18.6%
15-20	11.5%
Over 20	8.3%
Mean^	9.35
Business/work	
0-5	81.9%
5-10	11.0%
10-15	4.9%
15-20	1.5%
Over 20	0.7%
Mean^	3.85

[b] Question allowing multiple responses (e.g. tick all that apply)
* Items were measured on a scale from 1 (very unimportant) to 5 (very important)
^ Calculated with an upper limit of 30 days
Source: Author.

6.3 Water Behaviour in the Home

Following is a review of reported behaviours in the home. Question 15 (Appendix 4) presented eleven behaviours in the home aiming to understand a broad array of actions. Sample characteristics with significant relationships to overall water behaviour in the home, as recorded in question 16 ('overall, please indicate your effort to save water at home'), are also reported. It is important to note that non-parametric Kruskal-Wallis H tests do not explain where significant difference are found between groups. Instead, they show a difference between members of a group within the examined variable. Therefore further analysis is provided in following sections to explore the direction of the relationship.

6.3.1 General Description

While median values are commonly reported for non-parametric data (Hair, *et al.*, 2011), mean values are reported throughout this work to better define differences and relationships between categories. Reporting of the mean value with non-parametric data has been followed out in similar work by Barr, *et al.* (2011b) and Dolnicar and Grün (2009). The mean values and standard deviations of eleven behaviours are reported.

All questions have been converted to show similar direction toward water efficient behaviour to better display trends in the data. Specifically: 'I have longer showers when a shorter one would do' has been changed to 'I take efficient showers;' 'I let water run until it is at the right temperature' to 'I do not wait for the right temperature;' 'I take multiple showers/baths in a day' to 'I take one or less showers/baths per day;' 'I fill the kettle over the amount needed for

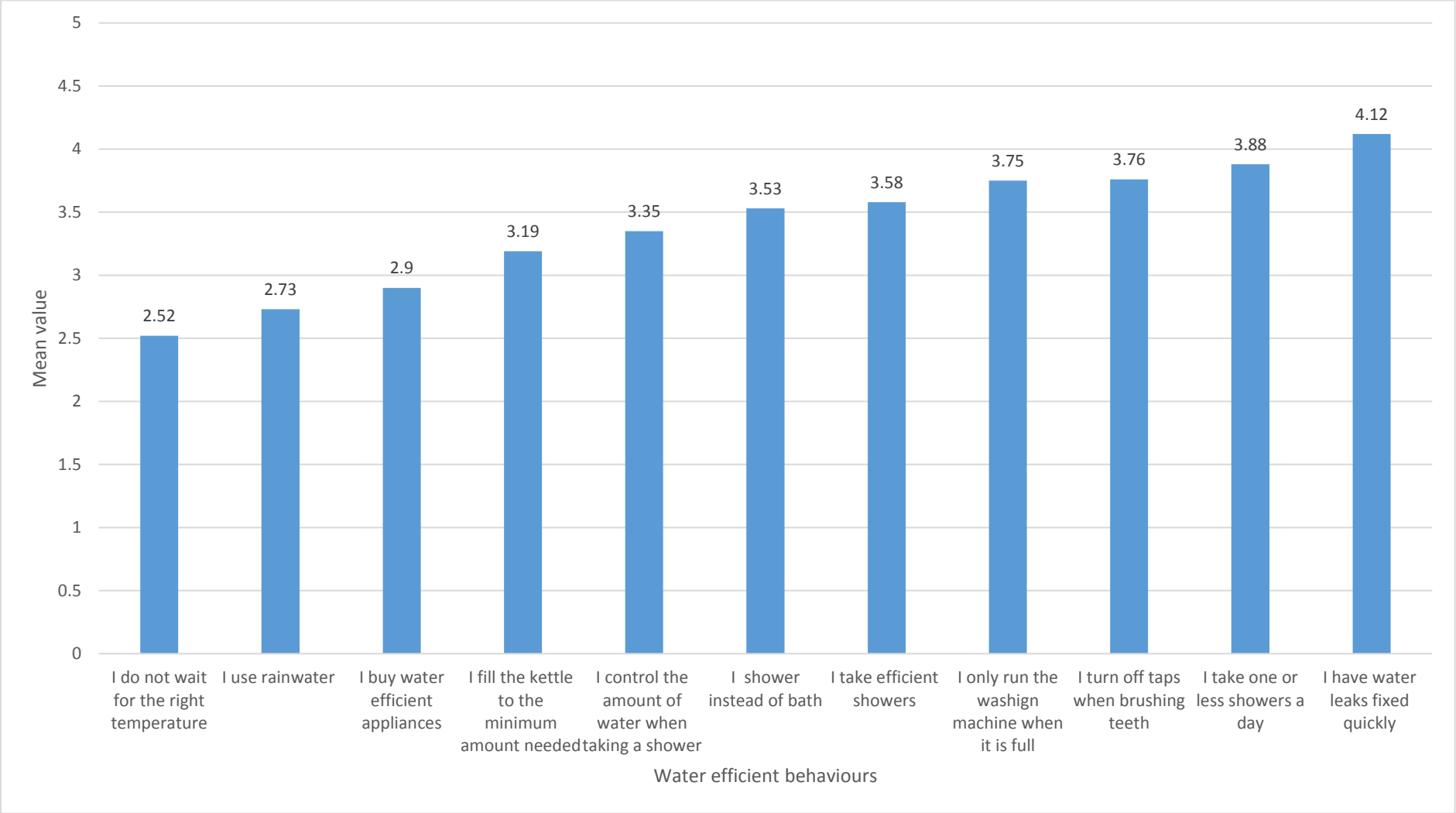
my hot drinks' to 'I fill the kettle to the minimum amount needed;' and, 'I run the washing machine when it is not full' to 'I only run the washing machine when it is full.'

Figure 6.1 presents a comparison between the mean values of each behaviour. Items were measured on a scale from 1 (never) to 3 (sometimes) to 5 (always). The behaviour 'I fix water leaks quickly' was the only behaviour to have an average score above a 4 ($\bar{x}$= 4.12, SD= 1.06). The behaviours 'refrain from taking multiple baths/showers daily' ($\bar{x}$= 3.88, SD= 1.08); 'turn off taps when brushing teeth' ($\bar{x}$= 3.76, SD= 1.29); 'run full loads in washing machine' ($\bar{x}$= 3.75, SD= 1.09); 'efficient time in shower' ($\bar{x}$= 3.58, SD= 1.05); 'shower instead of bath to save water' ($\bar{x}$= 3.53, SD= 1.28); 'control amount of water when showering' ($\bar{x}$=3.35, SD= 1.18); and, 'fill kettle to minimum amount' ($\bar{x}$= 3.19, SD= 1.25) all had mean scores between a 3 and 4. Finally, the behaviours 'buy water efficient appliances' ($\bar{x}$= 2.90, SD= 1.17), 'use rainwater' ($\bar{x}$= 2.73, SD= 1.44) and 'do not wait for desired temperature' ($\bar{x}$= 2.52, SD= 1.11) received an average score below a 3.

6.3.2 Sample Characteristics and Behaviour

In order to determine any significant relationships between the sample characteristics and overall effort to save water in the home (question 16), a series of non-parametric tests were conducted. A significant difference in overall effort to save water in the home was seen between differences in age, housing situation and

Figure 6.1: Mean Values of Reported Water Efficient Behaviours in the Home.



Note: Items measured on a scale from 1 (never) to 5 (always)

Source: Author.

metering status (Table 6.3). To further investigate these findings, Figure 6.2 shows overall efforts to save water in the home by age. While a perfect linear relationship does not appear, a trend of older individuals reporting higher effort to save water can be seen. Figure 6.3 presents effort to save water in the home by housing situation. The lowest effort is reported by 'shared-ownership,' which the UK Census defines as 'part owned and part rented' (UK Office for National Statistics, 2015). A Mann-Whitney U test was run between two collapsed categories. The first were 'home owned outright' and 'home owned with mortgage or loan' which were collapsed into the category of ownership of the home. The second category was 'let from council' and 'let from private landlord or letting agency' which were collapsed into a category of non-ownership. 'Shared-ownership' was omitted as it falls between the two categories and 'other' (n= 29) was omitted because it is not well enough defined to place into ownership (n= 228) or non-ownership (n= 146). A significant difference was found where home owners reported higher effort to save water in the home (U= 13857.5 and p= 0.00).

To further explore the relationship of metering status a Mann-Whitney U test was used between 'on a water meter' (n= 202) and 'unmetered' (n= 197). The category of 'has its own water supply' (n= 9) was omitted to ensure a clear examination of strictly metering status as it is possible that properties with their own water are, or are not, on a meter. A significant relationship was seen where individual 'on a water meter' also reported greater effort to save water in the home (U= 15655.5 and p= 0.00).

Table 6.3: Overall Effort to Save Water in the Home by Sample Characteristic.

Characteristics	$\bar{x}$	χ^2	p
Gender[u]		2012.5	0.82
Male	4.01		
Female	4.00		
Age[a]		25.3	0.00
18-19	3.72		
20-24	3.43		
25-29	3.78		
30-33	4.05		
35-44	4.09		
45-59	4.04		
60-64	4.17		
65-74	4.68		
>74	4.5		
Total household income+		6.4	0.49
<£9,999	4.1		
£10,000-£19,999	4.25		
£20,000-£29,999	3.84		
£30,000-£39,999	3.99		
£40,000-£49,999	4.17		
£50,000-£74,999	3.88		
£75,000-£100,000	4.12		
>£100,000	3.44		
Prefer not to say	3.65		
Highest educational qualification		5.57	0.23
GCSE/NVQ	4.17		
A/AS Level/GNVG	3.99		
Bachelor's Degree	3.88		
Master's	3.81		
Doctorate	4.53		
Average number of individuals in household		5.01	0.42
Presence of children in household[u]		19662	0.54
Housing situation[a]		19.34	0.00
Home owned outright	4.23		
Home owned with mortgage or loan	4.19		
Shared ownership	3.4		
Let from council	4.13		
Let from private landlord or letting agency	3.62		
Other	3.48		
Water meter status[a]		15.94	0.00
On a water meter	4.25		
Unmetered	3.77		
Has its own water supply	3.56		
Differences in water company+	-	27.93	0.14
Occupation		6.59	0.25
Higher managerial, administrative or professional	4.43		
Intermediate managerial, administrative or professional	4.00		
Supervisory or clerical and junior managerial, administrative or professional	3.95		
Skilled manual worker	3.97		
Semi and unskilled manual worker	3.66		
Casual or non-worker	4.05		

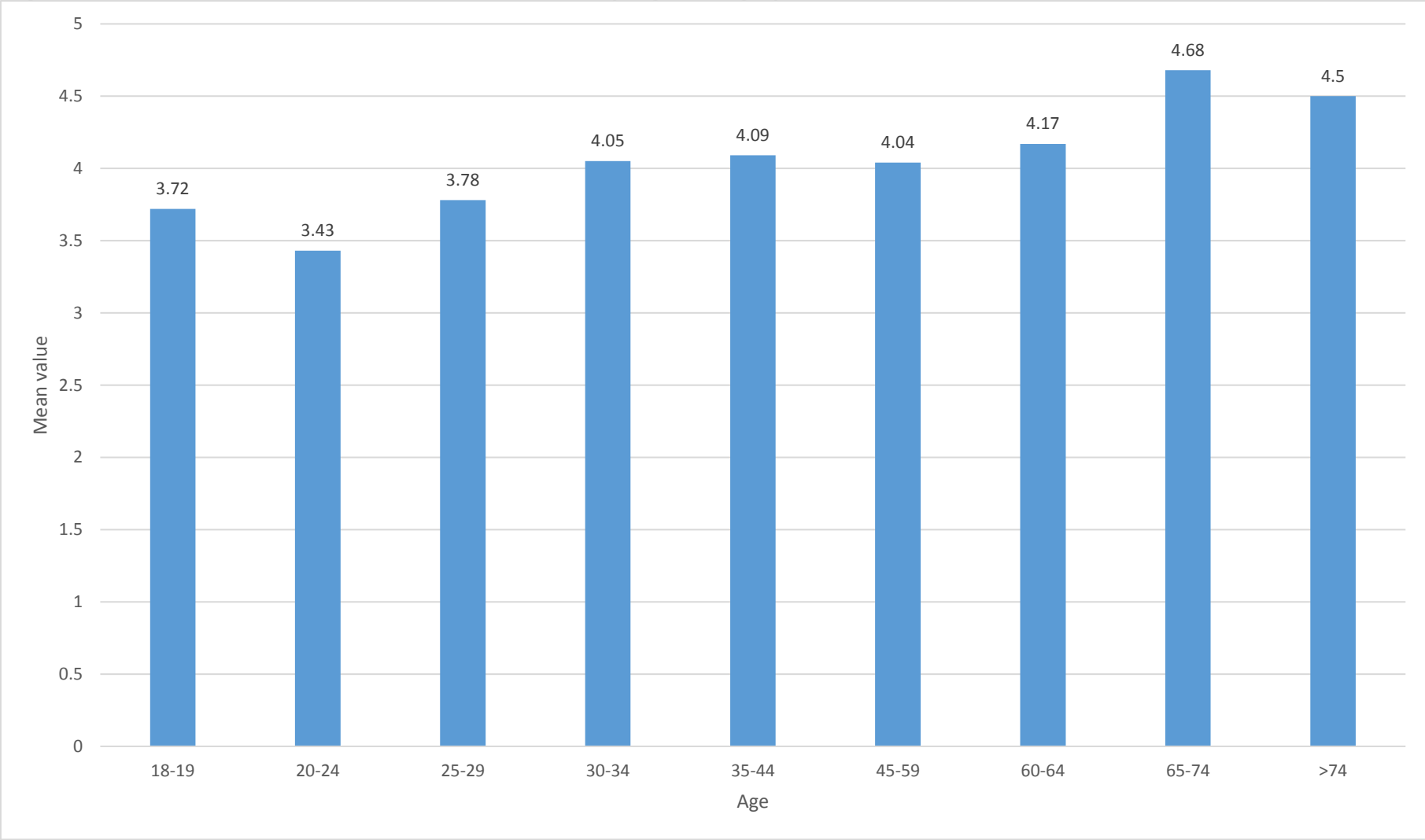
[u] Specifies a Mann-Whitney U test was performed with all other variables tested using a Kruskal-Wallis H test

[a] Indicates a significant difference using a Kruskal-Wallis H test ($p<0.05$)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

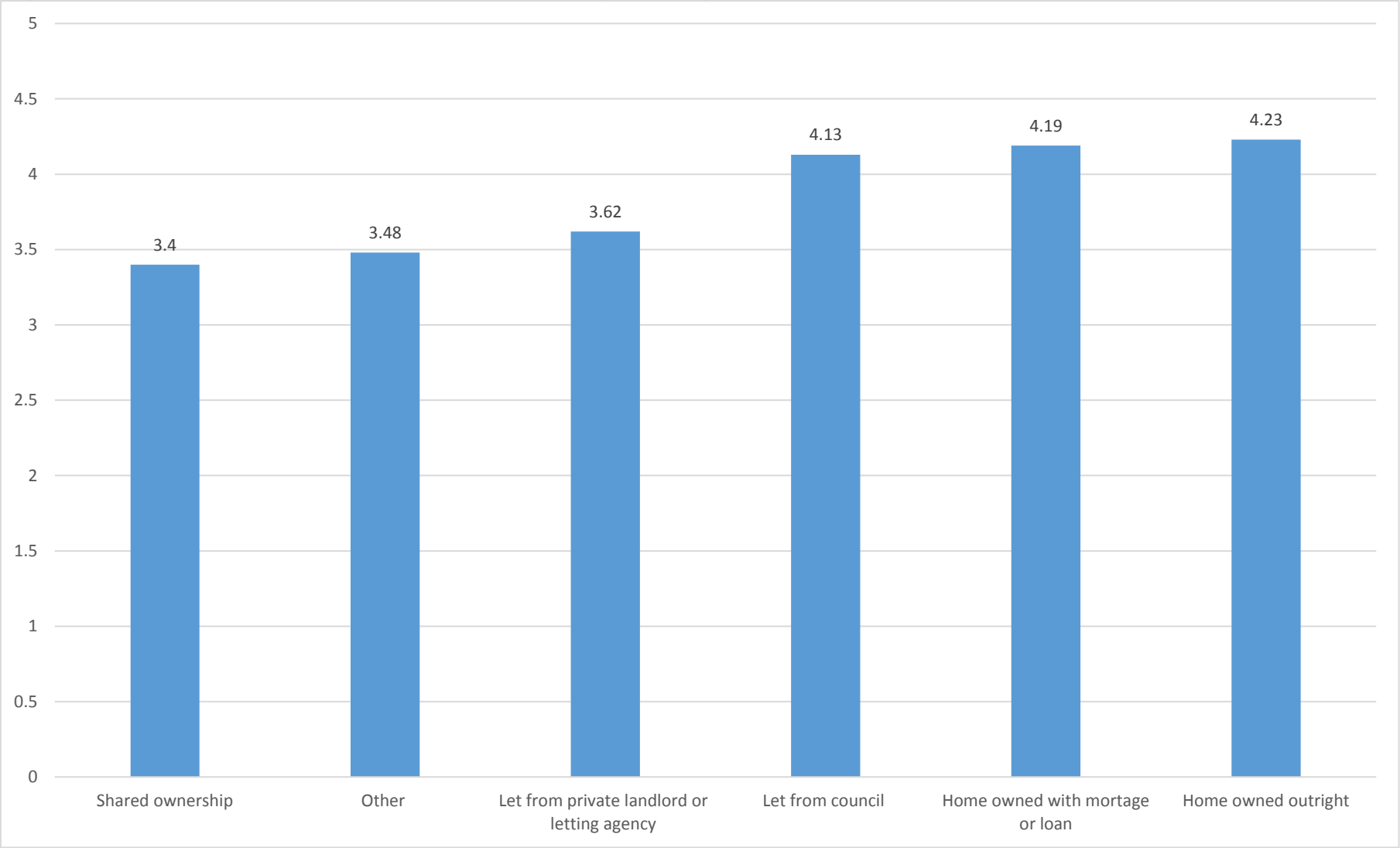
Figure 6.2: Overall Effort to Save Water in the Home by Age Category.



Note: Items measured on a scale from 1 (I made no effort to save water) to 5 (I made every effort to save water)

Source: Author.

Figure 6.3: Overall Effort to Save Water in the Home by Housing Situation.



Note: Items measured on a scale from 1 (I made no effort to save water) to 5 (I made every effort to save water)

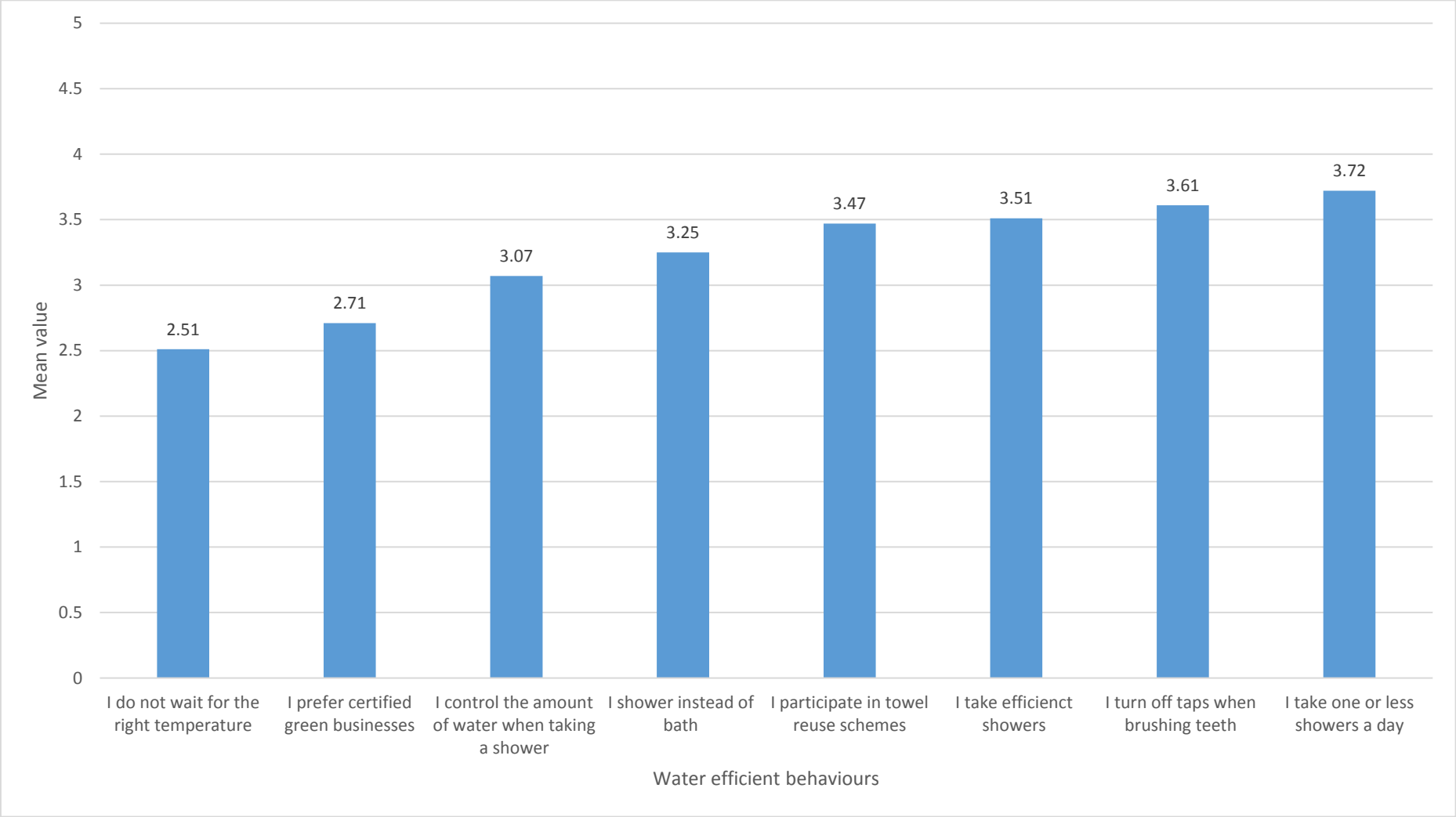
Source: Author.

6.4 Water Use in Tourism Accommodation

Participants were asked about their behaviours during their last stay in tourism accommodation. Some behaviours, examined in the home, are unlikely to be possible in tourism accommodation due to access to facilities (e.g. using rain water, buying water efficient appliances, etc.). Therefore, only eight, compared to eleven behaviours in the home, where investigated for tourism accommodation. For comparison, all behaviours were altered to show similar direction towards water efficient behaviour. Specifically, 'I have longer showers when a shorter one would do' was altered to 'I take efficient showers;' 'I let water run until it is at the right temperature' to 'I do not wait for the right temperature;' 'I take multiple showers/baths in a day' to 'I take one or less showers/baths per day;' and 'I let the tap run when brushing teeth' to 'I turn off taps when brushing teeth.'

The mean values of the eight behaviours in tourism accommodation are compared in Figure 6.4. Frequency of behaviours were measured on a Likert Scale from 1 (never) to 5 (always). In descending order from highest mean (most commonly performed behaviour) to lowest mean: 'refrain from taking multiple baths/showers daily' ($\bar{x}$= 3.72, SD= 1.05); 'turn off tap when brushing teeth' ($\bar{x}$= 3.61, SD= 1.35); 'efficient time in shower' ($\bar{x}$= 3.51, SD= 1.01); 'participate in towel reuse schemes' ($\bar{x}$=3.47, SD= 1.18); 'shower instead of bath to save water' ($\bar{x}$= 3.25, SD= 1.26); and, 'control water when taking a shower' ($\bar{x}$= 3.07, SD= 1.14) all received an average score between a 3 and 4. Receiving an average score between 2 and 3 were the behaviours, 'prefer certified green businesses' ($\bar{x}$= 2.71, SD= 1.01); and, 'do not wait for desired temperature' ($\bar{x}$= 2.51; SD=1.07).

Figure 6.4: The Mean Score of Reported Water Efficiency Behaviours in Tourism Accommodation.



Note: Items measured on a scale from 1 (never) to 5 (always).
Source: Author.

6.4.1 Sample Characteristics and Behaviour

In order to determine any significant differences between independent variables and overall effort to save water in tourism accommodation a series of non-parametric tests were conducted. No statistically significant relationships ($p<0.05$) were found as seen in Table 6.4.

6.4.2 Travel Characteristics and Behaviour

To understand how travel characteristics may affect overall effort to save water in tourism accommodation, a series of non-parametric tests were conducted (Table 6.5). Only average number of nights per year in tourism accommodation for work showed a significant relationship. Figure 6.5 explores this relationship further by graphing the mean of effort to save in tourism accommodation by average amount of stays for work in tourism accommodation. The graph suggests a positive relationship between more nights for work and effort to save water where effort rises with increases in nights stayed.

6.4.3 Attitudes Concerning Water

To better understand general feelings about water use and specific issues identified in the literature, participants were surveyed on eight questions concerning attitudes towards water in tourism accommodation. A Likert scale from 1 (‘strongly agree) to 3 (‘neither agree nor disagree’) to 5 (‘strongly disagree’) was used. To enable clearer understanding of responses all answers have been recoded to reflect a higher score indicating a higher degree of agreement (i.e. 1 is strongly disagree and 5 is strongly agree).

Table 6.4: Overall Effort to Save Water in Tourism Accommodation by Sample Characteristic.

Characteristics	$\bar{x}$	χ^2	p
Gender[u]		19324	0.35
Male	3.11		
Female	3.01		
Age		7.82	0.45
18-19	3.0		
20-24	2.64		
25-29	2.92		
30-34	3.27		
35-44	3.30		
45-59	3.0		
60-64	3.33		
65-74	2.95		
>74	2.25		
Total household income+		9.36	0.23
<£9,999	3.23		
£10,000-£19,999	3.14		
£20,000-£29,999	2.84		
£30,000-£39,999	3.25		
£40,000-£49,999	2.76		
£50,000-£74,999	3.08		
£75,000-£100,000	3.59		
>£100,000	2.44		
Prefer not to say	3.04		
Highest educational qualification		5.53	0.24
GCSE/NVQ	3.07		
A/AS Level/GNVG	3.13		
Bachelor's Degree	2.81		
Master's	3.35		
Doctorate	3.53		
Average number of individuals in household	-	5.1	0.83
Presence of children in household[u]	3.2	18536	0.11
No children in household	2.95		
Housing situation		3.93	0.56
Home owned outright	3.23		
Home owned with mortgage or loan	2.98		
Shared ownership	2.40		
Let from council	3.31		
Let from private landlord or letting agency	2.89		
Other	2.97		
Water meter status		0.42	0.81
On a water meter	3.08		
Unmetered	3.03		
Has its own water supply	3.11		
Differences in water company+	-	15.51	0.8
Occupation		11.01	0.06
Higher managerial, administrative or professional	3.59		
Intermediate managerial, administrative or professional	3.14		
Supervisory or clerical and junior managerial, administrative or professional	2.77		
Skilled manual worker	3.14		
Semi and unskilled manual worker	2.75		
Casual or non-worker	3.23		

[u] Specifies a Mann-Whitney U test was performed with all other variables tested using a Kruskal-Wallis H test

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

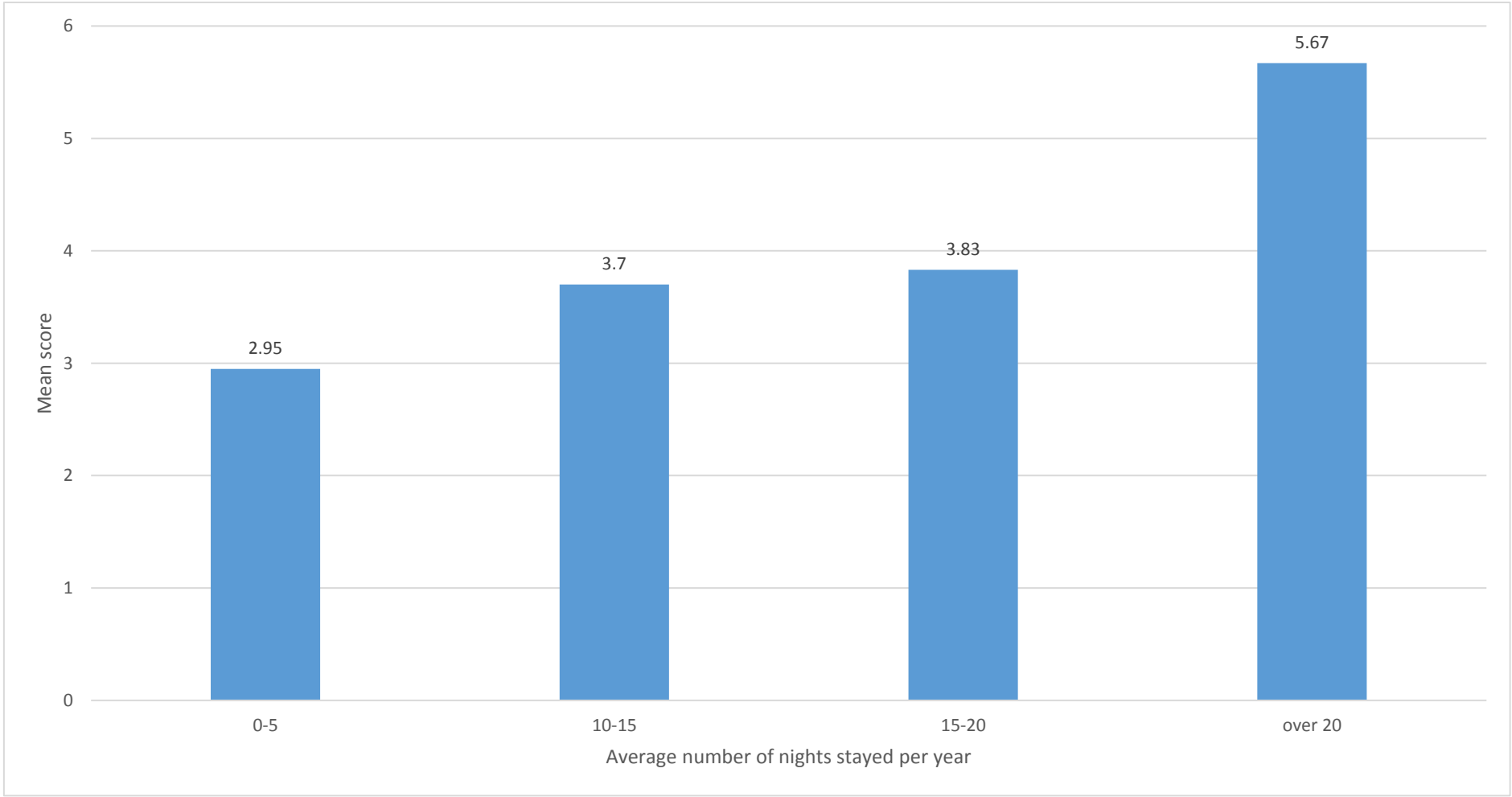
Table 6.5 Overall Effort to Save Water by Travel Characteristic.

Characteristics	$\bar{x}$	χ^2	p
Type of accommodation		5.48	0.14
Hotel	3.06		
B&B	3.09		
Self-catering	2.67		
Campsite/ Caravan Park	3.24		
Motivation for travel[bu]			
To visit friends and relatives	3.17	15631	0.24
Holiday	3.06	15730.5	0.94
Business or for work	3.31	5136.5	0.54
Nights stayed in tourism accommodation per year for:			
Holiday		4.74	0.32
0-5	2.98		
5-10	2.98		
10-15	2.92		
15-20	3.34		
Over 20	3.53		
Business/work[a]		14.9	0.00
0-5	2.95		
5-10	3.29		
10-15	3.70		
15-20	3.83		
Over 20	5.67		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)
[b] Question allowing multiple responses (e.g. tick all that apply)
[u] Specifies a Mann-Whitney U test was performed with all other variables tested using a Kruskal-Wallis H test
Source: Author.

Additionally, as explained in the methods section (Chapter Four), questions were originally posed as alternating from a positive to a negative attitude towards water efficiency to better ensure high quality data. It was deemed that questions lose their meaning when reworded to show similar direction. Therefore, attitudinal questions have been sorted into two categories: 'pro-water efficiency' and 'counter-water efficiency' to better show trends in the data.

Figure 6.5: Mean Score of Effort to Save Water by the Average Number of Nights Stayed in Tourism Accommodation for Business/Work per Year.



Note: Item measured on a scale from 0 (I made no effort) to 6 (I made every effort)

Source: Author.

Table 6.6 presents the % agree (strongly agree and agree); neither agree nor disagree; % disagree (strongly disagree and disagree); mean; and, standard deviation for each question. Questions are ranked in descending order by mean score within each category to better differentiate the data. A high amount of individuals (46.5%) agreed that they used less water than other guests with only 6.1% disagreeing, reporting they use more water than other guests.

A low amount of participants agreed that they were willing to pay for water efficiency (23.5%). Reported scepticism towards towel reuse schemes was high with 45.4% agreeing and only 25.5% disagreeing they are changed even if they participate. Finally, the highest disagreement was with the counter-water efficiency attitude of 'I've paid so I'll use as much as I like.'

6.4.3.1 Desired Services

To better understand expectations and the impact of certain water consumptive services on the booking process, participants were asked to rate the importance of seven water related services on the booking decision for their last stay in tourism accommodation. Figure 6.6 shows the mean value for each service. Spa, swimming pool and separate shower and bath had the lowest mean values (least impact on booking) while fresh linen, fresh towels daily and en-suite bathroom had the highest.

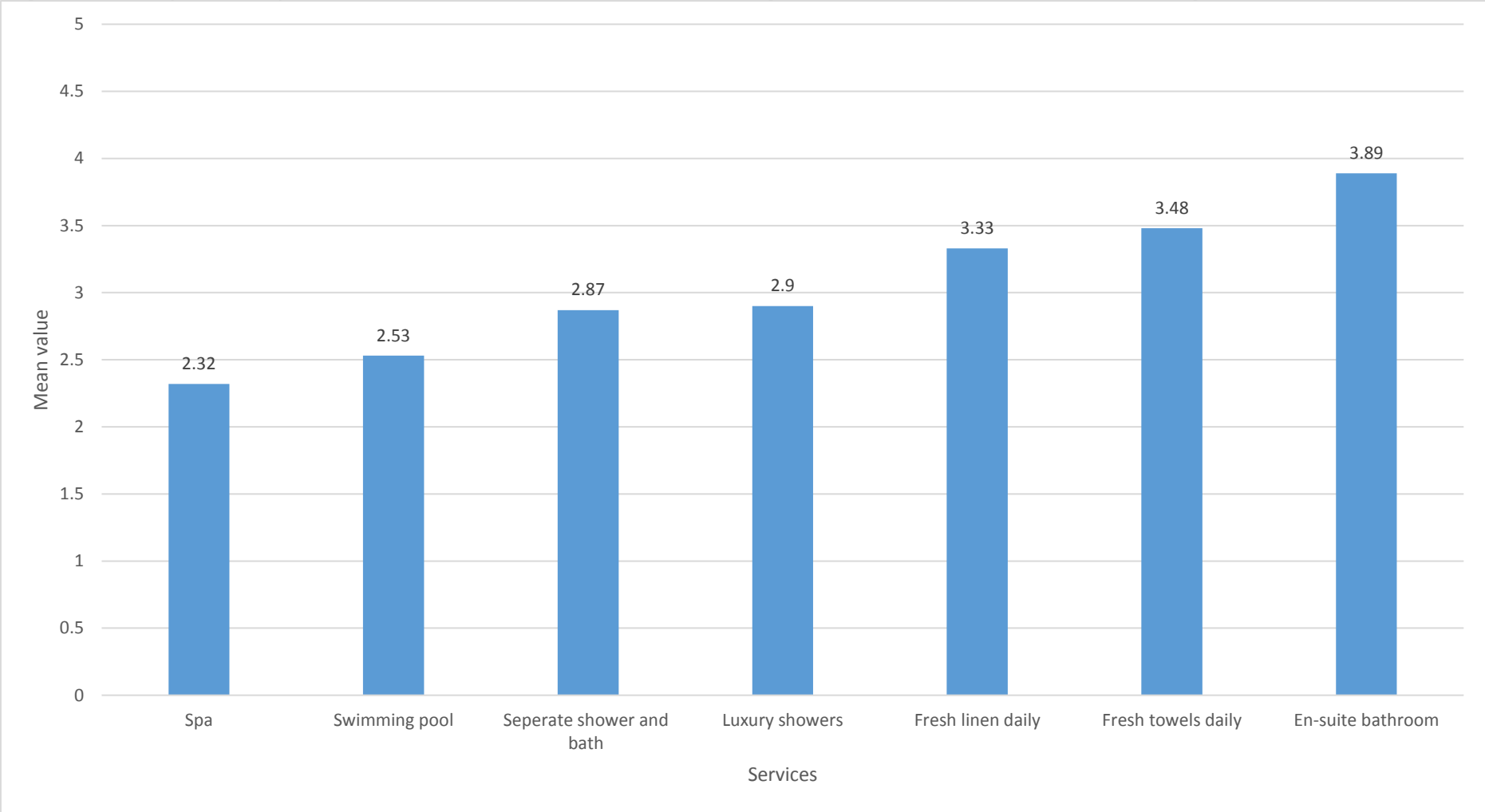
Table 6.6: Attitudes Concerning Water Issues in Tourism Accommodation.

Items	Value
*Tourism accommodation pro-water efficiency attitudes**	
I use less water than other guests	
%Agree	46.5
%Neither agree nor disagree	45.6
%Disagree	6.1
$\bar{x}$	2.48
SD	0.83
I apply what I have learned in tourism accommodation about water efficiency, when back at home	
%Agree	34.6
%Neither agree nor disagree	33.6
%Disagree	21.8
$\bar{x}$	2.30
SD	1.06
Participating in saving water positively affects my experience	
%Agree	32.6
%Neither agree nor disagree	46.1
%Disagree	21.3
$\bar{x}$	2.15
SD	0.95
I am willing to pay more for a water-efficient tourism accommodation	
%Agree	23.5
%Neither agree nor disagree	38
%Disagree	38.5
$\bar{x}$	1.78
SD	1.06
*Tourism accommodation counter-water efficiency attitudes**	
I believe that if I try to reuse my towel(s) more than once they are changed anyways	
%Agree	45.4
%Neither agree nor disagree	36
%Disagree	25.5
$\bar{x}$	2.14
SD	1.0
Luxury means being able to use as much water as I want	
%Agree	34.3
%Neither agree nor disagree	26.5
%Disagree	39.2
$\bar{x}$	1.92
SD	1.18
It's the accommodation providers' responsibility to save water, not the guests'	
%Agree	30.4
%Neither agree nor disagree	29.7
%Disagree	39.9
$\bar{x}$	1.85
SD	1.34
I've paid for the accommodation so I'll use as much water as I like	
%Agree	30.4
%Neither agree nor disagree	28.9
%Disagree	40.7
$\bar{x}$	1.83
SD	1.2

*Items measured on a scale from 1 (strongly disagree) to 5 (strongly agree). Strongly agree and agree combined into one category; strong disagree and disagree combined into another.

Source: Author.

Figure 6.6: Reported Importance of Desired Services When Booking Last Tourism Accommodation in England or Wales.



Note: Items measured on a scale from 1 (very unimportant) to 5 (very important)

Source: Author.

6.4.4.2 Barrier and Drivers to Water Behaviour

The descriptions of attitudes and desired services previously investigated lend some suggestions to the drivers and barriers of individuals to save water in tourism accommodation. To provide more direct information on this issue, open ended questions asked participants to explicitly state drivers and barriers to saving water in tourism accommodation. Note that 2.5% of the data for this section was uninterpretable and thus deemed unusable. The total sample size (n) for drivers and barriers, respectively, was therefore 397 participants.

Table 6.7 and 6.8 present the frequency of responses to question 8 ('is there anything preventing you from saving water in tourism accommodation, if so what?') and question 9 ('what would encourage you to participate more in saving water in tourism accommodation'). For question 8 (barriers), 74.5% stated 'N/A,' 'no' or 'nothing,' 2.2% stated they were 'unsure' and 2.5% were uninterpretable responses. The remaining 20.8% were grouped into similar themes and coded for analysis. In question 9 (drivers), 29.2% stated 'N/A,' 'no' or 'nothing,' 12% responded 'unsure' and 2.5% were uninterpretable. The remaining 43.7% were coded for analysis. Coded categories of responses show some of the potential barriers and drivers to water efficient behaviour in tourism accommodation. 'No,' 'nothing,' 'N/A,' were the most common response for both barriers and driver. Excluding these responses, for drivers, the top three most common responses were incentives (e.g. money off the bill, refunds or a gift); information on the importance; and, improved facilities. For barriers, the top three responses were limitations to the facility; attitude that free water is a right; and, timing of water to become hot.

Table 6.7: Stated Items that Prevent Water Efficient Behaviour in Tourism Accommodation.

Barriers	**Frequency** (n=379)
'N/A', 'no' or 'nothing'	304
Limitations to the facility	19
Attitude that water is a right	18
'Unsure'	10
Timing of water to become hot	9
Knowledge on the importance of the issue	8
Comfort	6
Habit	6
Too much effort	5
Need for cleanliness	4
Scepticism of towel reuse schemes	3
Knowing their usage	2
Lack of incentives	2
Knowledge of solutions	1

Source: Author.

Table 6.8: Stated Items that Would Encourage Water Efficient Behaviour in Tourism Accommodation.

Drivers	**Frequency** (n=379)
'N/A,' 'no' or 'nothing'	119
Incentives	104
Information on the importance	51
'Unsure'	49
Improved facilities	26
Engaging with guests in conversation	11
Reciprocal action by the accommodation	10
Information on solutions	8
Fees	7
Knowing their usage	6
A drought	3
Guilt	2
Other guests doing the same	2

Source: Author.

6.5 Comparing Home and Away Behaviour

A central question in this research is where to target behaviour. If behaviour carries over from home then it may be most effective to target behaviours in that site of practice. However, if changes from home and away occur at a high rate then the tourism accommodation may be the most effective place to target behaviour change initiatives. Following is a comparison between home and in

tourism accommodation in order to determine if behavioural flipping is significant and where such flipping may occur.

6.5.1 Overall Comparison

Reported overall effort to save water at home (question 16) and overall effort to save water in tourism accommodation (question 5) are compared in Figure 6.7. To test if this difference is significant, a Wilcoxon signed-ranks test was used. A Wilcoxon signed-ranks test is the non-parametric equivalent to a dependent t-test and is used to compare two sets of scores from the same participants. This test has been used to compare behaviour from holiday to home in similar research (Wooler, 2014). The Wilcoxon signed-ranks test shows that there is a statistically significant difference between overall effort to save water at home and when in tourism accommodation ($t= -10.81$, $p= 0.00$). The direction is apparent, where 37 individuals had a negative rank (greater effort in tourism accommodation); 219 reported a positive rank (greater effort at home); and 152 stayed the same. Therefore, individuals in this study reported a significantly greater effort to save water in the home then in tourism accommodation and there was evidence of behavioural flipping in water efficient behaviour between these two sites of practice.

To further investigate the issue of behavioural flipping, question 17 of the questionnaire asked individuals to compare their effort to save water at home to efforts in tourism accommodation. Figure 6.8 displays these results where 48.5% of individuals reported the same effort in both locations, 40% reported making less effort in tourism accommodation than at home and 11.5% reported less effort at home then in tourism accommodation.

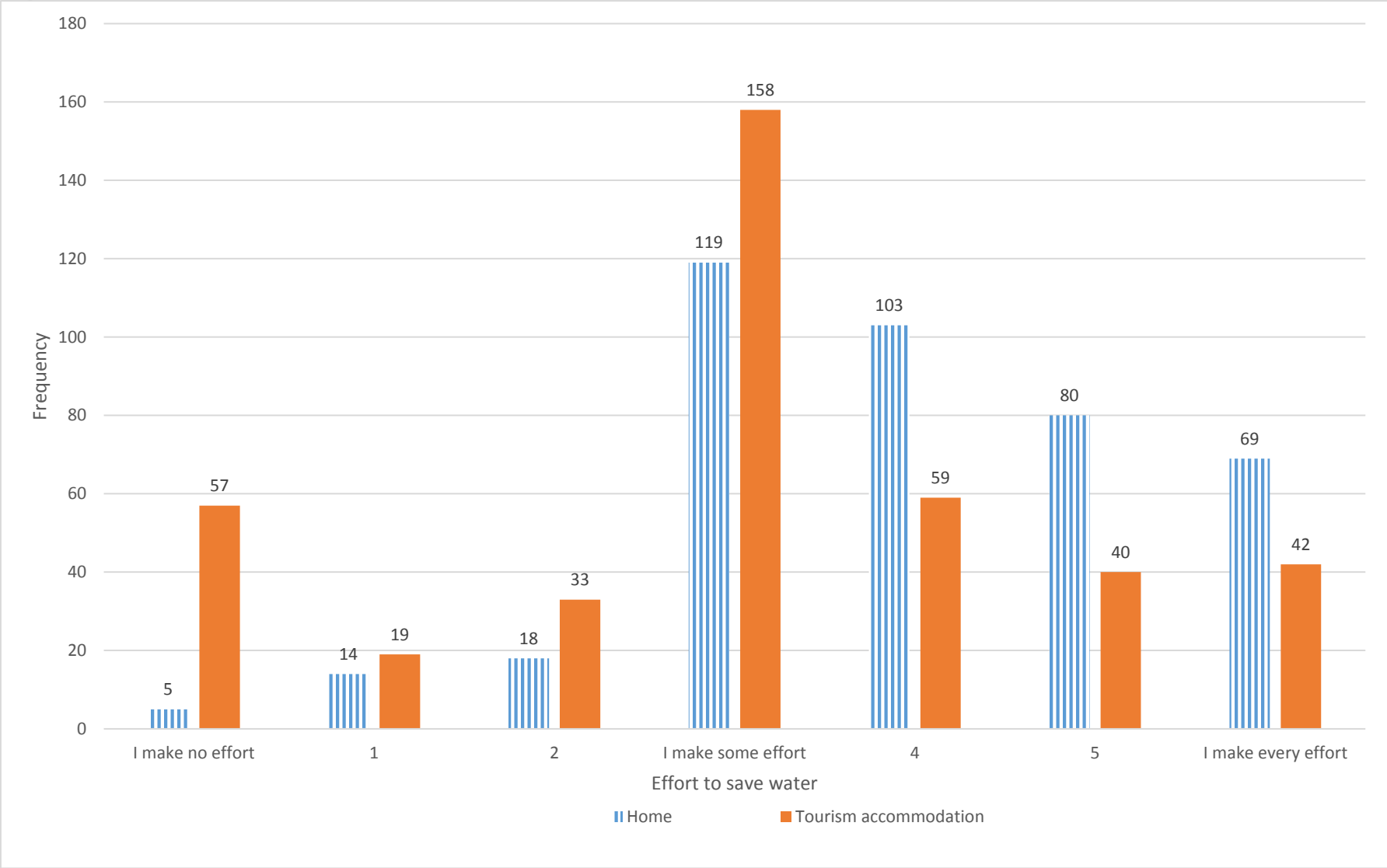
6.5.2 Individual Behaviours

Furthering this investigation, a series of Wilcoxon signed-ranks test were conducted to compare each of the six behaviours measured in both the home and in tourism accommodation ('I control water when taking a shower to save water;' 'I take efficient showers;' 'I shower instead of bath, specifically to save water;' 'I do not wait for the right temperature;' 'I take one or less showers/baths in a day;' and, 'I do not allow taps to run when brushing teeth'). Table 6.9 shows that four of the six behaviours ('I control water when showering;' I shower instead of bath;' 'I take one or less showers/baths per day'; and, 'I stop the tap when brushing teeth') where reported to occur significantly more in the home than in tourism accommodation. 'I take efficient showers' and 'I do not wait for the right temperature,' while slightly higher in the home, were not significantly different between sites of practice.

6.6 Initiatives to Change Guest Behaviour

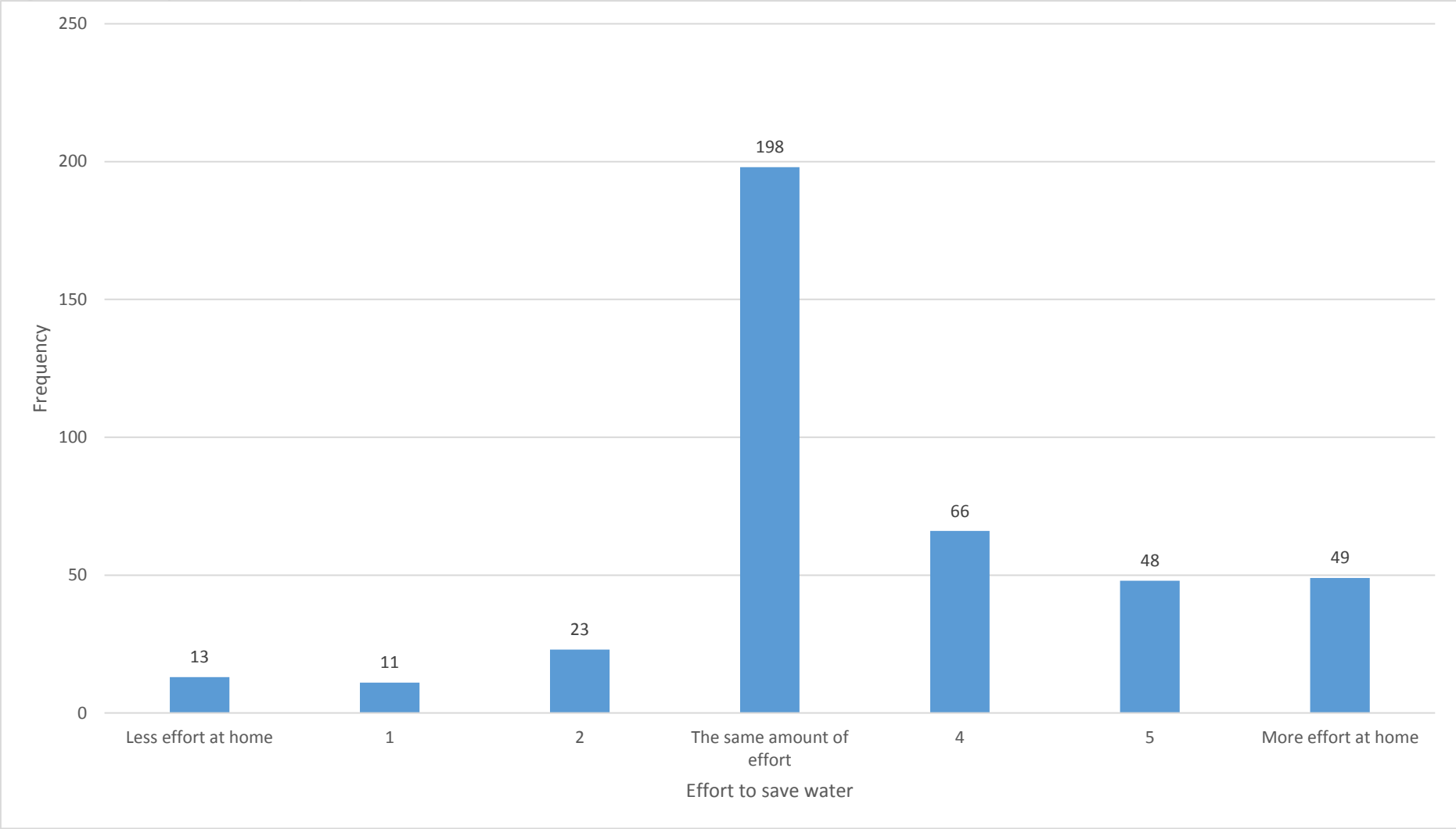
Following is an examination of initiatives, including messages, aimed at promoting water efficient behaviour. Non-parametric tests were used to determine any significant relationships between willingness to participate and sample and travel characteristics. The section will conclude by exploring physical locations within the tourism accommodation where messaging could be best communicated to the guest.

Figure 6.7: Overall Effort to Save Water in the Home and in Tourism Accommodation.



Source: Author.

Figure 6.8: Reported Comparison of Effort to Save Water between the Home and Tourism Accommodation.



Source: Autho

Table 6.9: Specific Water Efficient Behaviours Compared Between Sites of Practice.

Behaviours+	x̄	*t*	p
I control water when showering[a]		-4.85	0.00
Home	3.35		
Tourism accommodation	3.07		
I take efficient showers[R]		-1.77	0.08
Home	3.58		
Tourism accommodation	3.51		
I shower instead of bath[a]		-5.21	0.00
Home	3.53		
Tourism accommodation	3.25		
I do not wait for the right temperature[Ra]		-0.42	0.68
Home	2.52		
Tourism accommodation	2.51		
I take one or less showers/baths per day[Ra]		-3.87	0.00
Home	3.88		
Tourism accommodation	3.72		
I stop the tap when brushing teeth[a]		-2.63	0.01
Home	3.76		
Tourism accommodation	3.61		

+ Items measured on a scale from 1 (never) to 5 (always)
[a] Indicates a statistically significant difference between home and tourism accommodation using a Wilcoxon signed-rank test ($p<0.05$)
[R] Item has been reverse coded
Source: Author.

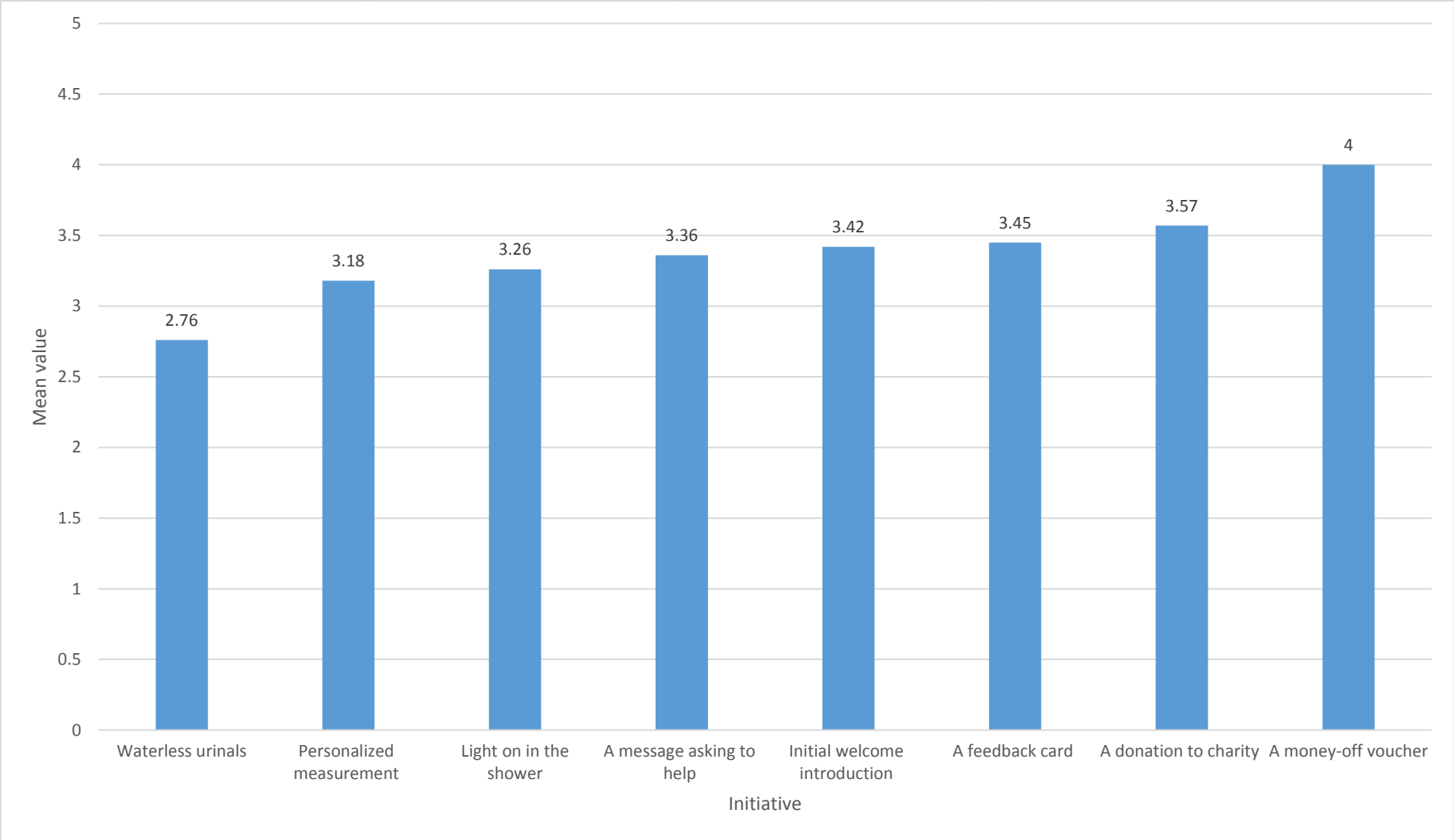
6.6.1 Initiatives

Question 10 measured how eight pro-environmental initiatives created from previous data collection with managers may affect the guest experience. Initiatives were scored based on how they would affect the guest experience on a scale from 1 (very negatively) to 3 (neither negative nor positive) to 5 (very positively). In descending order from very positive to very negative the initiatives ranked: 'A money-off voucher on concessions or your next stay if the towel or linens are not changed every day' ($\bar{x}$= 4.00, SD= 0.92); 'a donation to charity if the towel or linens are not changed every day' ($\bar{x}$= 3.57, SD= 1.04); 'a feedback card asking you for suggestions on how to improve the

accommodation's environmental efforts' ($\bar{x}$= 3.45, SD= 0.89); 'having the environmental efforts highlighted during the initial welcome introduction' ($\bar{x}$= 3.42, SD= 0.97); 'a message asking you to help use less water' ($\bar{x}$= 3.36, SD= 0.96); 'a light on in the shower indicating you have exceeded 5 minutes' ($\bar{x}$= 3.26, SD= 1.02); 'personalized measurement of how much water you used during your last stay available for you to see' ($\bar{x}$= 3.18, SD= 1.14); and, 'waterless urinal in the facility' ($\bar{x}$= 2.75, SD= 1.08). Figure 6.9 compares the mean values for each initiative. The relationships between sample and travel characteristics for each initiative are explored below.

Money-off vouchers ranked highest among the initiatives for positivity affecting the guest experience ($\bar{x}$= 4.0). Differences between characteristics were examined with only changes in occupation showing a significant relationship (Appendix 7). Individuals categorized as 'casual or no work' scored highest while individuals identifying as 'skilled manual workers' and 'semi and unskilled workers' scored lowest (the same mean). A donation to charity received the second highest mean score ($\bar{x}$= 3.57). As seen in Appendix 8, significant relationships were observed between differences in gender, occupation and highest educational qualification. Specifically, females reported more positively toward this initiative than males. Positivity rose as educational qualification rose where individuals with a doctorate reported the greatest positive affect on their experience. For occupation, participants identifying as 'intermediate managerial, administrative or professional' scored lowest while 'higher managerial, administrative or professional' scored highest. Therefore, occupation showed no immediately obvious trends.

Figure 6.9: How Initiatives Aiming to Promote Water Efficiency Would Affect the Guest Experience.



Note: Items measured on a scale from 1 (very negative) to 5 (very positive)

Source: Author.

Feedback cards, had the third highest mean score ($\bar{x}$= 3.45). Significant relationships were observed between presence of children and differences in occupation (Appendix 9). Individuals reporting children in the household had a significantly higher rating of positivity towards this initiative. For occupation, individuals identifying as 'higher managerial, administrative or professional' had the highest mean while no other obvious trends emerged.

Having the environmental efforts of the accommodation highlighted during your initial welcome had the fourth highest mean score ($\bar{x}$= 3.42). Appendix 10 presents significant relationships between characteristics. Significant differences were observed between variation in number of people living in the household and presence or absence of children. Specifically, those households with more people and those with the presence of children reported a significantly higher positive affect on their experience.

In Stage Two (manager interviews) messaging to guests was the preferred strategy of many managers due to their perceived low impact on guests and potential for substantial changes. Here, a message asking to help save water had the fifth highest mean score ($\bar{x}$= 3.36). No significant relationships were observed between sample and travel characteristics (Appendix 11).

The initiative of a light turning on in the shower indicating five minutes have passed scored sixth in overall mean value ($\bar{x}$= 3.26). As seen in Appendix 12, significant relationships were observed with number of individuals in the household and presence of children in the household. Participants with more individuals in the home and those with children in the household reported a significantly higher positive impact on their experience for this initiative.

A personalized measurement of water use had the seventh highest mean value ($\bar{x}$= 3.18). Analysis of the data (Appendix 13) indicates age, number of individuals in the home and presence of children in the household all have significant relationships with this initiative. With regard to age, 60-64 and 65-74 year olds reported the lowest positive affect on their experience, while 18-19 year olds reported the highest. Households with more people and the presence of children both reported significantly greater positive impact from the initiative.

The implementation of waterless urinals in the accommodation showed the lowest mean score ($\bar{x}$= 2.76) and only initiative to score below a 3. Appendix 14 presents the data, where sample characteristics of gender, age and presence of children in the household had significant relationships with the initiative. To further investigate the relationships of gender, a cross-tabulation was performed. 37.8% of females reported a negative or very negative impact and only 13.3% reported a positive or very positive impact. This was in contrast to 29.7% of males reporting negative or very negative and 29.2% reporting positive or very positive and 41.1% reporting neither positive nor negative. This suggests that females were more likely to report a negative impact and males were nearly evenly divided between positive and negative. Therefore, if waterless urinals are placed in the guestroom it is likely to cause a negative impact on female guests. However, waterless urinals in male only bathrooms (i.e. in common areas) may have a negligible impact, as females would not be subject to them.

With regard to other relationships for waterless urinals, 65-74 and over 74 year olds had the lowest mean scores while households with children showed higher positivity to the initiative. For travel characteristics, individuals

reporting over 20 and 10-15 nights per year in tourism accommodation for business had the highest mean scores.

6.6.2 Messaging

Five messages were examined to determine to what extent each would encourage the guest to use less water in tourism accommodation. Messages were measured based on how much they would encourage water efficiency on a scale from 1 (none) to 3 (some) to 5 (very much). In order to simplify displaying results, several of the messages are re-labelled. Specifically, the message beginning with 'other guests…' has been labelled 'other guest'. 'Please promote our beautiful local…' has been re-labelled to 'promote.' The message beginning with 'quack, quack…' has been re-labelled 'child focused.' 'Amazingly, of the 22 water…' has been re-labelled to 'scarcity.' And finally, 'heating and transporting water…' has been labelled 'climate change.'

Figure 6.10 displays the mean values for each message. The message reported to most encourage water efficient behaviour was 'promote' ($\bar{x}$=3.62, SD= 1.01). This was followed by the climate change message ($\bar{x}$=3.28, SD= 1.08) and then scarcity ($\bar{x}$= 3.23, SD= 1.10). 'Other guests' was ranked next ($\bar{x}$= 3.06, SD= 1.06), while the child focused message had the lowest mean value ($\bar{x}$= 2.93, SD= 1.22) and only score below a 3.

The message to promote the environment had the highest mean score ($\bar{x}$= 3.62) of all messages examined in this research. Note this is the 'generic' message used by hotels (Goldstein, *et al.*, 2008). Appendix 15 shows a significant relationship was observed between genders. Specifically, females

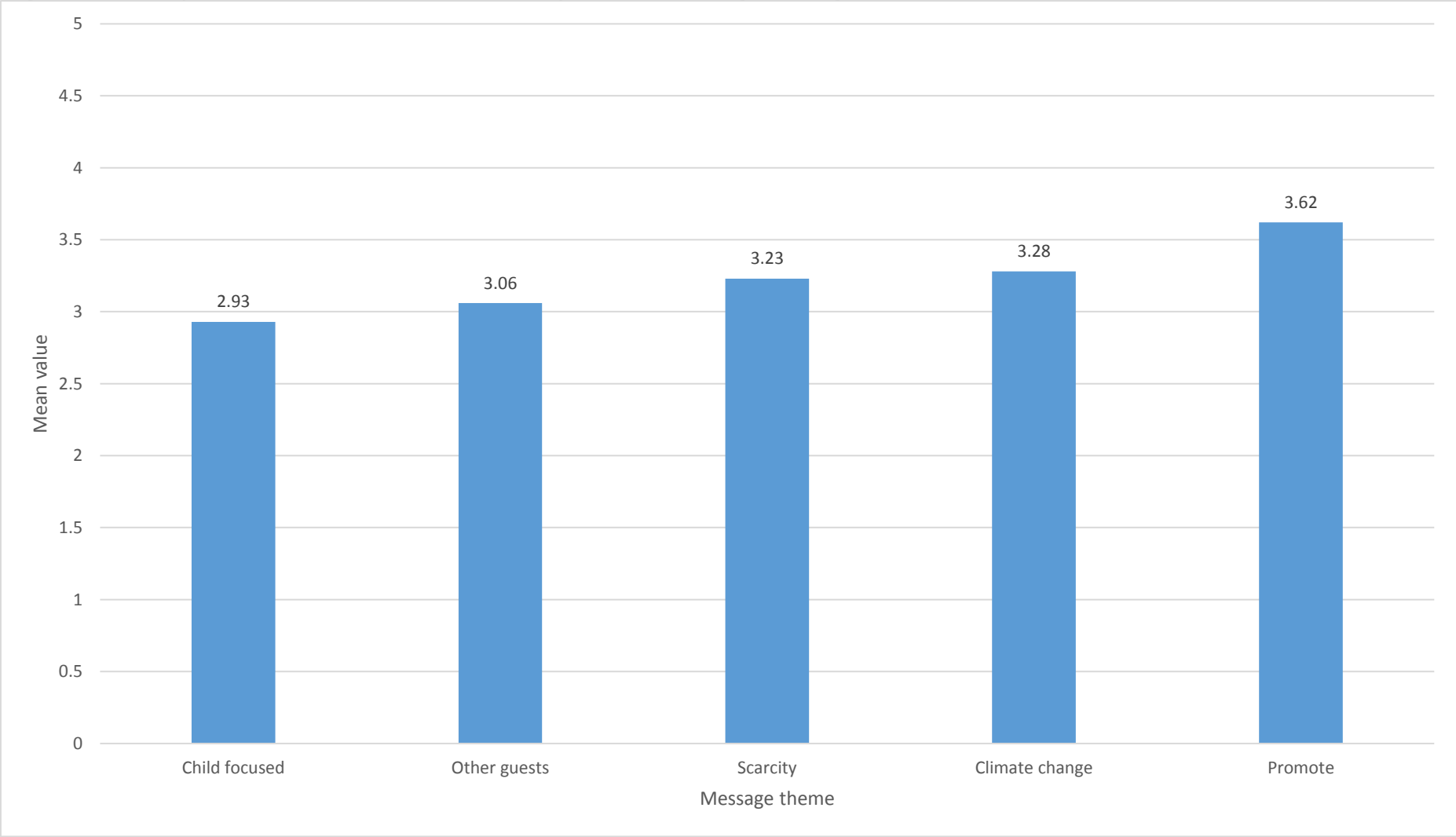
reported this message would significantly encourage their efficient water use more than males. No other significant differences between characteristics were observed.

Impacts on climate change message had the second highest mean score ($\bar{x}$ = 3.28). Highest educational qualification showed a significant relationship where individuals with Master's and Doctorate degrees had the highest scores (Appendix 16). No other significant relationships were observed.

The message informing guests of scarcity of water in the UK had the third highest mean score ($\bar{x}$= 3.23). As seen in Appendix 17, a significant relationship was observed with number of nights stayed in tourism accommodation per year for business/work. The highest mean was reported by the greatest amount of nights and lowest by least amount of nights. However, other values did not confirm this relationship. Therefore, this relationship is not clearly defined.

A message of 'other guests' had the second lowest mean score ($\bar{x}$= 3.06). Significant relationships were observed, as presented in Appendix 18, for presence of children and nights stayed for business/work. Households with children present reported the message would have significantly more encouragement then households without children. Individuals staying 20 nights in tourism accommodation for business/work per year had the highest mean score; 15-20 the second highest; and, 10-15 the third highest. The lowest category, 0-5, had the lowest mean score. This suggests that the more nights stayed for business/work per year the greater the reported impact from this message.

Figure 6.10: Reported Likelihood to Act Caused by a Water Saving Message.



Note: Items measured on scale from 1 (none) to 5 (very much)

Source: Author.

The child focused message had the lowest mean score ($\bar{x}$= 2.93) of all investigated messages. Appendix 19 presents the data with significant relationships between this message and gender; number of individuals in the household; presence of children in the household; and, amount of nights stayed per year for business/work. Females reported this message would encourage water efficient behaviour significantly higher than males. Participants living in households with more individuals reported significantly higher responses than those with less people in the household. Individuals with children in the household reported significantly higher scores than those without children. And finally, individuals spending the most amount of nights in tourism accommodation for business/work reported the highest score for this message while those staying the least amount per year reported the lowest.

6.6.3 Locations for Messaging to Guests

Following is an analysis of responses to question 12, where a message promoting water efficiency would have the most impact on their behaviour. This question allowed respondent to select all that applied. As a result, Table 6.10 presents the data in descending order by frequency of selections and percentages will not add to 100. The bathroom (75%) and welcome packet (43%) were the most selected location and 'on my phone' the least (5%). Only 7% of participants selected 'no message would impact me.'

Table 6.10: Where Messaging Promoting Water Efficiency Would have the Highest Impact on Behaviour.

Location	Frequency	% of Sample Selecting the Location*
Bathroom	308	75%
Welcome pack	174	43%
Accommodation's website	90	22%
Verbally during the introduction	60	15%
Personalized email prior to arrival	58	14%
None- 'No message would impact me'	27	7%
On my phone	21	5%

***Note:** Will not add to 100% as respondents could select more than one location
Source: Author.

6.7 Cluster Analysis: Behaviours in Tourism Accommodation

Segmenting the audience is an important step in social marketing campaigns where the aim is to better understand and then target specific groups most effectively (Andreasen, 2002; French, *et al.*, 2010; Truong and Hall, 2013). To accomplish segmentation, the statistical method of cluster analysis is routinely used. Cluster analysis is a commonly used marketing technique (Mazzocchi, 2008) that through numerous steps of combining observations places them together into 'heterogeneous groups consisting of homogenous elements' (Franke, Reisinger and Hoppe, 2009, p.273).

Cluster analysis was performed to identify segments with homogenous water efficient behaviour within the tourism accommodation. In some previous efforts (e.g. DEFRA, 2009; UKWIR, 2014; Shaw, *et al.*, 2013), both attitudes and behaviours have been used for clustering. This method assumes there is a translation from attitude to behaviour. To avoid this assumption, only behaviours were used in this study. Other research (e.g. Dolnicar and Grun,

2009; Barr, *et al.*, 2011b) investigating behavioural flipping in similar sites of practice have created cluster using behaviours in the home. Because this research is most concerned with changing behaviour in tourism accommodation, it was determined that behaviours reported in this site of practice were most important to cluster around. This was deemed particularly vital as behavioural flipping was discovered in earlier analysis and thus home behaviour was not necessarily a faithful predictor of behaviour in tourism accommodation.

The current study followed the 70:1 sample size to variable ratio recommended by Dolnicar, *et al.* (2013). With a sample size of 408, five behaviours within the tourism accommodation were used. Prior to the final analysis, exploratory cluster analysis was first conducted. During exploratory cluster analysis, Hair, *et al.* (2011) recommend clustering variables with a range of methods and analysing results prior to determining the final protocol. This was done over many reiterations with clustering on varying behaviours to ensure due diligence. Through exploratory cluster analysis, five water behaviours were chosen based partially on their high variation between individuals (see Figure 6.4), as recommended by Hair, *et al.* (2011), and also through trial and error with the goal of discovering stable and valid clusters. The five behaviours: 'I have longer showers when a shorter one would do;' 'I shower instead of bath specifically to save water;' 'I take multiple showers/baths in a day;' 'If offered, I participate in towel reuse schemes, not to have my towels washed each day;' and, 'I let the taps run when brushing my teeth' where all used in the final clustering procedure. All behaviours were measured on the same five point Likert scale and the categorical data were standardized.

In the final analysis, a two-step procedure was applied where hierarchical cluster analysis determined the number of clusters and non-hierarchical cluster analysis (K-means) was used to place individuals within the determined number of clusters. This two-step procedure is recommended by Mazzochi (2008) and Hair, *et al.* (2011) for whom hierarchical techniques have the main advantage of simplicity by allowing the researcher to evaluate the amount of appropriate clusters through the use of a dendrogram and agglomeration coefficients. They also have several disadvantages, mostly that once an observation is placed into a cluster in an early clustering event, it is stuck there until the final clustering sequence. Hair, *et al.* (2011) continue that K-means analysis has the advantage of flexibility in placing objects into different clusters throughout the repetitive clustering process to ensure best fit. Thus, combining both methods allows the researcher to use the strength of both processes by determining numbers of clusters using hierarchal and then establishing clusters through the flexible process of non-hierarchal.

During hierarchical clustering, Ward's method was used as it creates more similarly sized groups (Hair, *et al.*, 2011) and has been applied in similar research (e.g. Barr, *et al.*, 2011b and Coles, *et al.*, 2014). Squared Euclidean distance was used as the measurement between observations for Ward's method as recommended by Hair, *et al*. (2011). No single 'stopping rule' has been found to be best for determining the number of clusters (Mazzocchi, 2008).

Here the dendrogram (Appendix 20) and percent change in heterogeneity between clustering groups, using a calculated agglomeration coefficient, were used and a three or four cluster solution emerged as most valid. After exploring both outcomes, a three cluster solution was deemed most

stable and valid. Note that Clusters 1 and 3 are most related with regard to the five behaviours, this will be revisited later in the chapter. K-means cluster analysis was then run with a three cluster solution and was considered stable with only 3.6% of individuals changing cluster positions between the hierarchal and non-hierarchal test. Hair, *et al.* (2011) classify cross tabulations of under 10% as very stable. All five behaviours used for clustering were significantly different between clusters.

Cluster 1 was primarily composed of individuals reporting the highest water efficiency behaviour and highest willingness to engage with initiatives and messaging. The second cluster, had the lowest reported efficiency behaviour both in the home and in tourism accommodation. While Cluster 3 showed less willingness to engage with messaging and initiatives than the other clusters

6.7.1 Describing the Clusters

Following the same outline as the general analysis, the project objectives are used as a frame work to present results. For the three clusters, general characteristics and an investigation into the water behaviours (research question 2.2) and attitudes towards water in tourism accommodation guests (objective 2.3) are presented. Differences between water use behaviour at home and in tourism accommodation (research question 2.4) are briefly explored. Expectations concerning water consumptive services in accommodation (research question 2.4) are described. Key initiatives and messages are evaluated on how they may impact the guest experience (research question 3.1). And finally, the physical location of messaging in the tourism accommodation that would most impact behaviour are identified

(research question 3.2). Each cluster is then described individually to better define their unique characteristics.

To aid in a general understanding of each cluster, descriptive characteristic are presented in Table 6.11. Variables with significant differences, using a Kruskal-Wallis H tests ($p<0.05$), between clusters were age and presence of children in the household. Table 6.12 presents travel characteristics for each cluster with visiting friends and relatives; six of the seven desired services (excluding en-suite bathrooms); and number of nights stayed in a tourism accommodation for business/work per year showing significant differences between clusters.

6.7.1.1 Behaviours and Attitudes

Table 6.13 presents behavioural data for each cluster. A Kruskal-Wallis H test ($p<0.05$) revealed a significant difference between overall effort to save water in tourism accommodation and in the home between clusters. However, no significant difference between comparing overall effort at home and in tourism accommodation were detected. All behaviours measured within the tourism accommodation are significantly different between the three clusters. Cluster 1 had the highest reported mean (effort) for each behaviour. Cluster 2 and 3 each have the lowest mean for four different behaviours respectively.

Table 6.11: Characteristics of the Sample by Cluster.

Characteristics	Cluster 1	Cluster 2	Cluster 3	χ^2	P
n	165	135	108		
Gender				2.79	0.25
Male	44.8%	45.9%	36.1%		
Female	55.2%	54.1%	63.9%		
Age[a]				19.27	0.00
18-19	3%	3.7%	7.4%		
20-24	8.5%	11.1%	12%		
25-29	11.5%	28.1%	19.4%		
30-34	15.2%	14.1%	18.5%		
35-44	20%	17.8%	17.6%		
45-59	21.2%	20%	16.7%		
60-64	11.5%	2.2%	1.9%		
65-74	7.9%	2.2%	5.6%		
>74	1.2%	0.7%	0.9%		
Average age[b]	42.3	36.18	36.5		
Total household income+				0.82	0.66
<£9,999	7.3%	7.4%	8.3%		
£10,000-£19,999	18.8%	18.5%	18.5%		
£20,000-£29,999	14.5%	18.5%	16.7%		
£30,000-£39,999	17.6%	20%	18.5%		
£40,000-£49,999	14.5%	11.9%	13%		
£50,000-£74,999	12.1%	11.1%	15.7%		
£75,000-£100,000	3.6%	7.4%	0.9%		
>£100,000	3%	2.2%	0.9%		
Prefer not to say	8.5%	3%	7.4%		
Highest educational qualification				1.49	0.48
GCSE/NVQ	24.8%	25.2%	26.9%		
A/AS Level/GNVG	33.9%	25.2%	25%		
Bachelor's Degree	28.5%	30.4%	33.3%		
Master's	9.1%	13.3%	13.9%		
Doctorate	3.6%	5.9%	0.9%		
Average number of individuals in household	2.81	3.06	2.94	2.08	0.35
Presence of children in household[a]	36%	53%	41%	8.8	0.01
Housing situation				2.16	0.34
Home owned outright	24.2%	22.2%	25%		
Home owned with mortgage or loan	36.4%	27.4%	31.5%		
Shared ownership	1.8%	1.5%	0%		
Let from council	12.7%	15.6%	11.1%		
Let from private landlord or letting agency	18.8%	27.4%	22.2%		
Other	6.1%	5.9%	10.2%		
Water metrics					
With water meter in the home	52%	44%	54%	2.94	0.23
Differences in water company+	-	-	-	0.28	0.87
Occupation				1.72	0.42
Higher managerial, administrative or professional	8.5%	9.6%	9.3%		
Intermediate managerial, administrative or professional	20%	20.7%	17.6%		
Supervisory or clerical and junior managerial, administrative or professional	30.9%	28.9%	29.6%		
Skilled manual worker	10.9%	20%	12%		
Semi and unskilled manual worker	4.2%	10.4%	10.2%		
Casual or non-worker	25.5%	10.4%	21.3%		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

Table 6.12: Travel Characteristics by Cluster.

Characteristics	Cluster 1	Cluster 2	Cluster 3	χ^2	P
Type of accommodation				0.8	0.68
Hotel	48.5%	49.6%	53.7%		
B&B	15.2%	20%	13.9%		
Self-catering	13.3%	8.9%	13%		
Campsite/ Caravan Park	23%	21.5%	19.4%		
Motivation for travel[b]					
To visit friends and relatives[a]	22.4%	39.3%	23.1%	12.2	0.02
Holiday	76.4%	67.4%	80.6%	5.95	0.05
Business or for work	4.8%	10.4%	6.5%	3.51	0.17
Mean score of services' importance on last booking*					
Swimming pool[a]	2.29	2.93	2.38	20.50	0.00
En-suite bathroom	3.89	4.01	3.74	1.08	0.58
Spa[a]	2.05	2.67	2.31	21.21	0.00
Separate shower and bath[a]	2.8	3.13	2.68	10.85	0.00
Fresh linen daily[a]	3.13	3.7	3.18	18.64	0.00
Fresh towel(s) daily[a]	3.29	3.81	3.33	14.02	0.01
Luxury shower[a]	2.74	3.21	2.74	19.48	0.00
Nights stayed in tourism accommodation per year for:					
Holiday				4.94	0.09
0-5	35.2%	38.5%	25.9%		
5-10	25.5%	28.9%	29.6%		
10-15	15.2%	18.5%	24.1%		
15-20	9.7%	10.4%	15.7%		
Over 20	14.5%	3.7%	4.6%		
Mean^	10.01	8.18	9.79		
Business/work[a]				17.81	0.00
0-5	90.9%	71.1%	81.5%		
5-10	3.6%	20%	11.1%		
10-15	3.6%	6.7%	4.6%		
15-20	1.2%	0.7%	2.8%		
Over 20	0.6%	1.5%	0.0%		
Mean^	3.36	4.61	3.49		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)
[b] Question allowing multiple responses (e.g. tick all that apply)
* Items were measured on a scale from 1 (very unimportant) to 5 (very important)
^ Measured with an upper limit of 30 nights
Source: Author.

Table 6.13: Mean Scores of Water Efficiency Behaviour at Home and in Tourism Accommodation by Cluster.

Item	Cluster 1	Cluster 2	Cluster 3	χ^2	P
Overall effort to save water in tourism accommodation$^{\varphi a}$	3.56	2.64	2.81	23.29	0.00
Overall effort to save water at home$^{\varphi a}$	4.56	3.47	3.82	51.23	0.00
Compared overall effort between home and tourism accommodation^	3.56	3.5	3.6	0.02	0.99
Tourism accommodation behaviours+					
I control water when showering^{a}	3.56	2.78	2.69	52.1	0.00
I take efficient showers^{Ra}	4.07	2.73	3.64	131.6	0.00
I shower instead of bath to save water^{a}	4.24	2.94	2.1	204.8	0.00
I do not wait for the right temperature^{Ra}	2.65	2.27	2.63	9.06	0.01
I prefer certified green businesses^{a}	2.85	2.73	2.47	10.51	0.01
I take one or less showers/baths per day^{Ra}	4.17	2.84	4.16	137.7	0.00
I participate in towel reuse schemes^{a}	3.96	3.16	3.12	51.54	0.00
I turn off the tap when brushing teeth^{Ra}	4.23	2.35	4.22	170.6	0.00

$^{\varphi}$ Items measured on a scale from 0 (I make no effort to save) to 6 (I make every effort to save)
^{a} Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test ($p<0.05$)
^ Items measured on a scale from 0 (less effort to save water at home than in accommodation to 6 (more effort to save water at home than in accommodation)
^{R} Item has been reverse coded
+ Items measured on a scale from 1 (never) to 5 (always)
Source: Author.

Table 6.14 presents attitudinal data for each cluster. Kruskal-Wallis H tests ($p<0.05$) revealed a significant difference for each attitude between clusters except willingness to pay more for a water efficient accommodation. Note this was also the lowest scored attitude (most negative) of the eight attitudes measured. Cluster 1 consistently had stronger agreement toward pro-water efficiency attitudes and lower agreement towards counter-water efficiency

behaviours then Cluster 2 and 3. Clusters 2 and 3 each showed the lowest level of agreement for two pro-water efficiency attitudes respectively. While Cluster 2 had the highest level of agreement towards all counter-water efficiency attitudes. Said another way, Cluster 2 had the most negative attitudes towards water efficiency within tourism accommodation.

6.7.1.2 Desired Services

Consumer preferences for water consumptive services, affecting each clusters' last purchase of tourism accommodation are presented in Figure 6.11. For every service, Cluster 2 reported the highest mean (greatest importance). In contrast, Cluster 1 had the lowest mean (lower importance) for five of the seven services. The exceptions were en-suite bathroom and separate shower/bath where Cluster 3 reported the lowest mean.

6.7.2 Initiatives and Messaging

To better understand how initiatives may affect the guest experience and messages may promote water efficient behaviour by each cluster, Table 6.15 is presented. Every initiative showed a significant difference between clusters using a Kruskal-Wallis H test ($p<0.05$). Cluster 1 reported each initiative would have the highest effect on their experience of the three clusters. Importantly, Cluster 3 reported the least positive affect on their experience for every intervention except a money-off voucher.

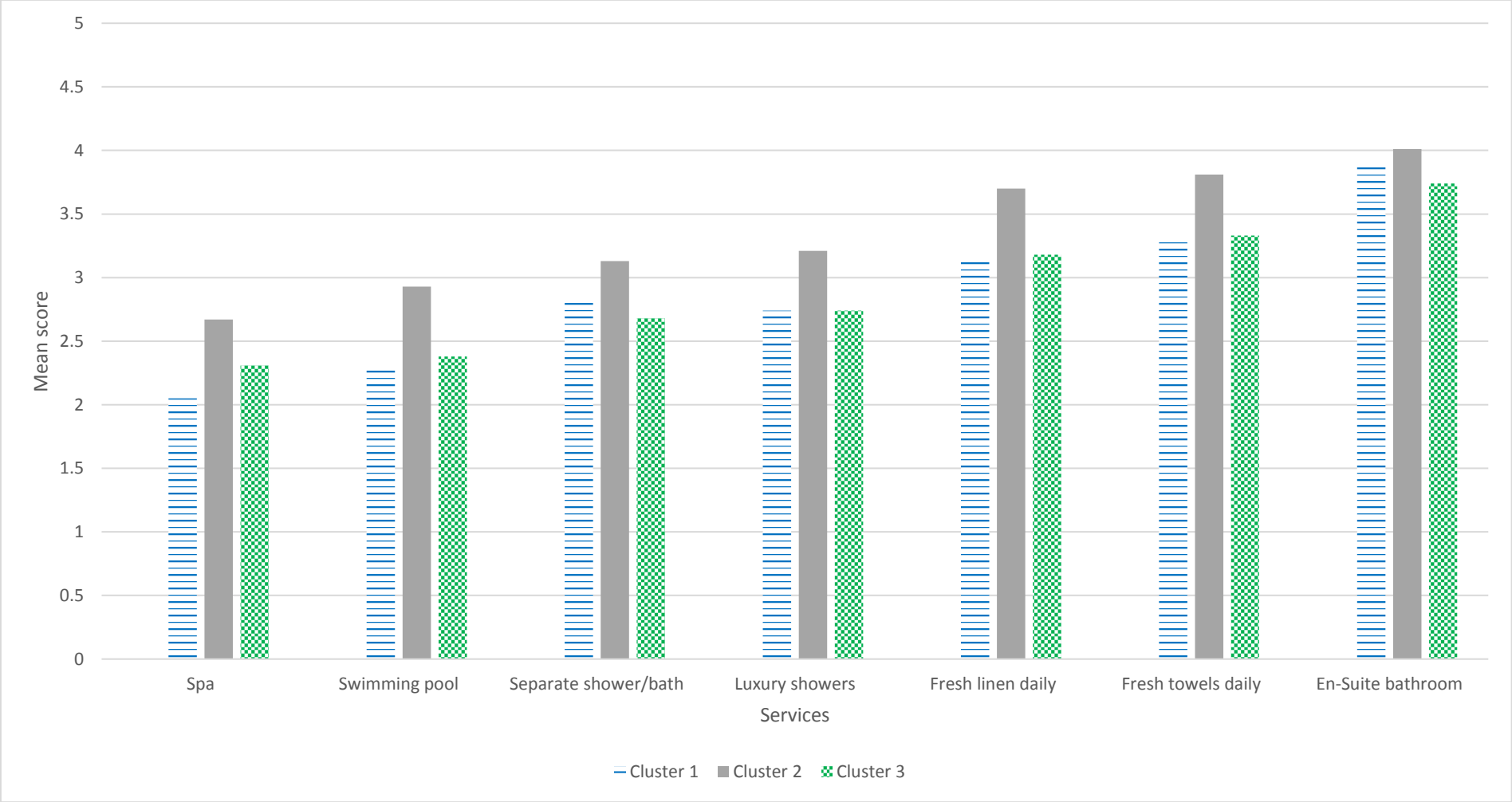
Table 6.14: Attitudes Concerning Water Issues by Cluster.

Items	Cluster 1	Cluster 2	Cluster 3	χ^2	p
*Tourism accommodation pro-water efficiency attitudes**					
I apply what I have learned in tourism accommodation about water efficiency, when back at home[a]				14.34	0.00
%Agree	52.8	40.8	37		
%Neither agree nor disagree	32.7	34	34.3		
%Disagree	14.5	25.2	28.7		
$\bar{x}$	2.53	2.21	2.04		
I use less water than other guests[a]				12.53	0.00
%Agree	55.1	41.5	39.8		
%Neither agree nor disagree	42.5	46.7	49.1		
%Disagree	2.4	11.8	11.1		
$\bar{x}$	2.65	2.39	2.31		
Participating in saving water positively affects my experience[a]				13.92	0.00
%Agree	42.4	23.7	28.7		
%Neither agree nor disagree	41.8	48.9	49.1		
%Disagree	15.6	27.4	22.3		
$\bar{x}$	2.35	1.97	2.06		
I am willing to pay more for a water-efficient tourism accommodation				0.42	0.81
%Agree	19.4	29.6	22.2		
%Neither agree nor disagree	41.2	31.1	41.7		
%Disagree	39.4	39.3	36.1		
$\bar{x}$	1.77	1.83	1.72		
*Tourism accommodation counter-water efficiency attitudes**					
Luxury means being able to use as much water as I want[a]				47.57	0.00
%Agree	18.8	50.4	38		
%Neither agree nor disagree	24.2	30.4	25		
%Disagree	57	19.2	37		
$\bar{x}$	1.5	2.43	1.92		
I've paid for the accommodation so I'll use as much water as I like[a]				73.89	0.00
%Agree	14.5	48.2	32.4		
%Neither agree nor disagree	21.2	35.6	32.4		
%Disagree	64.3	16.3	35.2		
$\bar{x}$	1.27	2.44	1.92		
It's the accommodation providers' responsibility to save water, not the guests'[a]				45.5	0.00
%Agree	21.8	44.4	25.9		
%Neither agree nor disagree	21.2	37.8	32.4		
%Disagree	57	17.8	41.7		
$\bar{x}$	1.46	2.36	1.77		
I believe that if I try to reuse my towel(s) more than once they are changed anyways[a]				7.46	0.02
%Agree	38.2	43.7	32.4		
%Neither agree nor disagree	32.7	40	36.1		
%Disagree	29.1	16.3	31.5		
$\bar{x}$	2.09	2.33	1.99		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test ($p<0.05$)
*Items measured on a scale from 1 (strongly disagree) to 5 (strongly agree). Strongly agree and agree combined into one category; strong disagree and disagree combined into another.

Source: Author.

Figure 6.11: The Level to Which Water Consuming Services were Considered for Clusters' Last Tourism Accommodation Booking.



Note: Items measured on a scale from 1 (very unimportant) to 5 (very important)
Source: Author.

Table 6.15: Impact on the Guest Experience from Behaviour Change Initiatives and Messaging by Cluster.

Item	Cluster 1	Cluster 2	Cluster 3	χ^2	p
*Initiatives**					
A light turning on in the shower when you have exceeded 5 minutes[a]	3.44	3.24	3	13.21	0.00
A messaging asking you to help use less water[a]	3.61	3.23	3.16	18.48	0.00
A donation to charity by the accommodation if the towels or linens are not changed every day[a]	3.78	3.46	3.4	13.6	0.00
Having the environmental efforts of the accommodation highlighted during your initial welcome introduction[a]	3.66	3.35	3.16	20.01	0.00
A feedback card asking you for suggestions on how to improve the accommodation's environmental efforts[a]	3.65	3.41	3.2	15.54	0.00
A money-off voucher on concessions or your next stay if the towels or linens are not changed every day[a]	4.24	3.79	3.91	16.49	0.00
Personalized measurement of how much water you used during your stay made available for you to see[a]	3.41	3.16	2.84	17.17	0.00
Waterless urinals located in the facility[a]	2.81	2.99	2.4	19.24	0.00
Messages^					
Other guests in this accommodation have expressed a desire for us to use less water, please aid us in this endeavour[a]	3.14	3.15	2.83	6.19	0.04
Please promote our beautiful local environment by using less water[a]	3.84	3.47	3.45	15.37	0.00
Quack quack is duck for 'please save some water for me'[a]	2.98	3.08	2.67	7.71	0.02
Amazingly, of the 22 water supply areas in England and Wales, the Environment Agency classifies 12 as 'seriously water stressed'. This assessment…..[a]	3.41	3.22	2.97	10.39	0.01
Heating and transporting water consumes a large amount of electricity, increasing greenhouses gases. For example……[a]	3.48	3.24	3.01	14.28	0.00

*Items measured on a scale from 1 (very negatively) to 5 (very positively).
[a] Indicates statistically significant differences using a Kruskal-Wallis H test ($p<0.05$)
^ Items measured on a scale from 1 (none) to 5 (very much)
Source: Author.

In order to better define where potential messages could be best placed to change behaviour, Table 6.16 presents the reported location of where messages would have a high impact on behaviour by cluster. Significant differences, using Kruskal-Wallis H tests ($p<0.05$), were seen between messages in the bathroom, website, verbally and reporting that no message would be effective. Specifically, Cluster 1 reported the highest mean score for the bathroom and website. Cluster 2 reported the highest response to verbal requests and Cluster 3 reported the highest response to none, where no messages would be effective. To better understand each cluster the following sections will investigate them in detail individually.

Table 6.16: Location Where Messages Would have the Highest Effect on Behaviour by Cluster.

Location	Cluster 1	Cluster 2	Cluster 3
Bathroom[a]	84%	68%	72%
Welcome packet	40%	44%	44%
Website[a]	28%	20%	16%
Verbally[a]	13%	24%	5%
Email	16%	14%	11%
Phone	6%	7%	1%
None, 'no messages would be effective'[a]	4%	8%	9%

[a] Indicates a significant difference between clusters using a Kruskal-Wallace H test ($p<0.05$)
Source: Author.

6.7.3 Cluster 1: 'Most Conscientious'

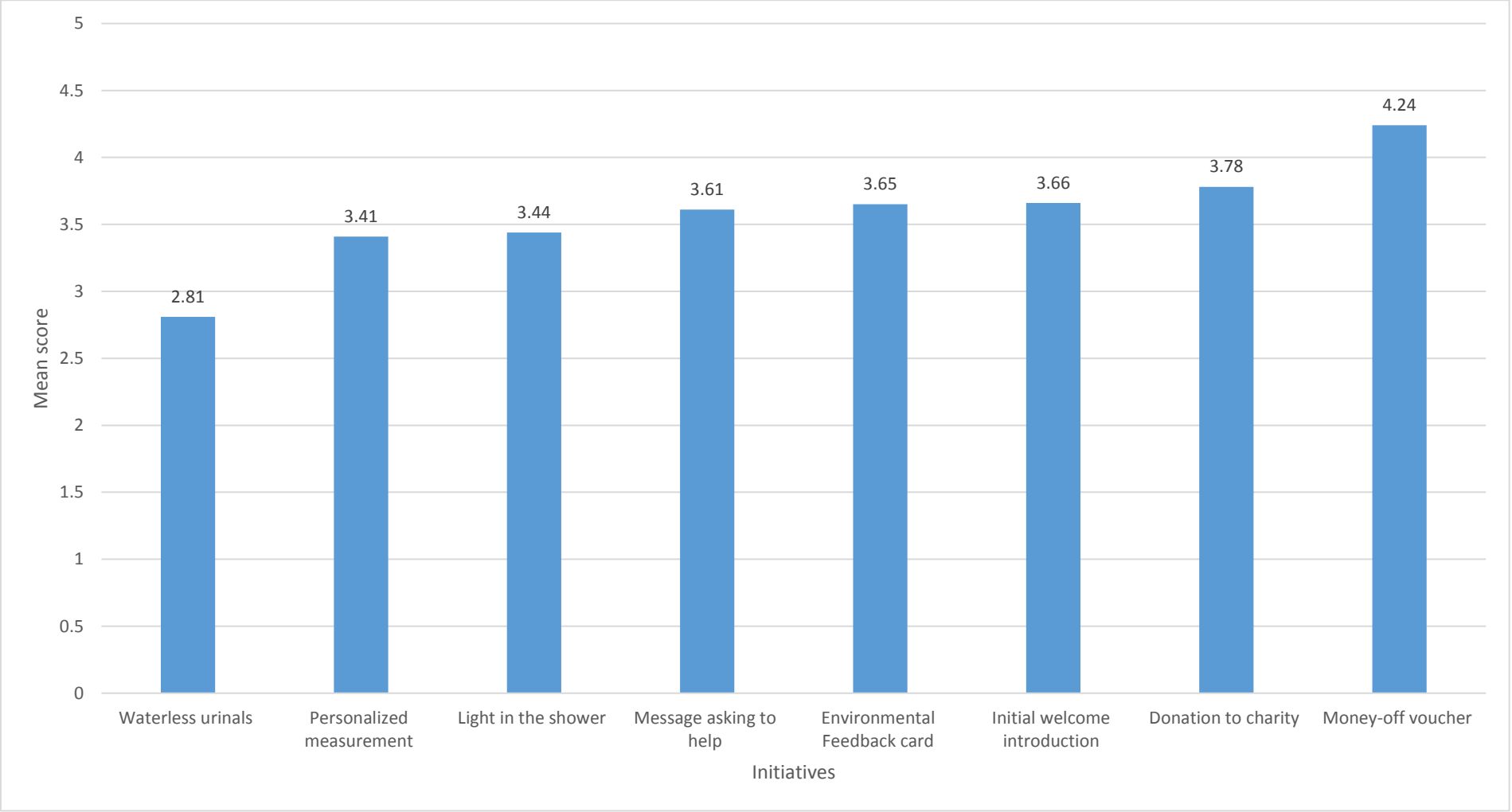
Cluster 1 was the largest group (n=165). The average age of this group was higher than the other clusters (42.3 years old). This cluster was also

characterized by fewer households with children (36%) then other groups. The presence of children in the household was significantly different between clusters. Additionally, this cluster contained the lowest amount of individuals visiting friends and relatives (22.4%); lowest reported importance of all services on booking their last accommodation and selected the lowest average amount of nights stayed in accommodation for business/work (3.36) of the three clusters.

This cluster reported making the greatest overall effort both in the home (4.56) and in tourism accommodation (3.56). They reported the greatest effort for all eight behaviours within the tourism accommodation. Both overall efforts and each of the eight behaviour in tourism accommodation were significantly different between clusters. Cluster 1 therefore appeared to make the most effort in saving water. Their attitudes reflected their behaviours. On every item, they reported more agreement with pro-water efficiency attitudes and more disagreement on counter- water efficiency attitudes then other clusters.

Cluster 1 stated that every initiative, except waterless urinals, would positively affect their experience more than other clusters. Figure 6.12 compares the initiatives for this cluster to show which may have the highest positive impact on their experience. Money-off vouchers and donations to charity scored highest (most positive impact on the experience) while waterless urinals and personalized measurements scored lowest. Messages were also positively received by this cluster. The highest mean score for three of the five messages belonged to this cluster: climate change, scarcity and ‘promote.’ Because each cluster agreed on the order of encouragement from each message, please refer to Figure 6.10 for rankings.

Figure 6.12: How Initiatives Would Affect the Guest Experience for Cluster 1.



Note: Items measured on a scale from 1 (very negatively) to 5 (very positively)
Source: Author.

For where a message would be best placed, they most frequently stated: bathroom (84%), welcome packet (40%), website (28%) and then email (16%).

To summarize this cluster, it contained older and less seasoned business travellers. Comparative to other clusters, services did not heavily influencing their last booking. They were the most water conscious both in the home and on holiday and they reported the most positively about initiatives and messaging. Said another way, they were the 'most conscientious' with regard to using water efficiently and most likely to accept initiatives aimed at changing their behaviour.

6.7.4 Cluster 2: 'Overt Users'

The average age of this cluster was the lowest in comparison (36.18 years). This cluster reported more households with children (53%) then other clusters. They had the most amount of individuals visiting friends and relatives (39.3%). Cluster 2 reported the highest importance for every service on booking their last accommodation. Additionally they stayed overnight for business/work on average (4.61 nights) per year more often than other cluster.

Overall effort to save water in tourism accommodation (2.64) was lowest among the clusters. Accentuating the clusters' uniqueness, Appendix 20 shows that Cluster 1 and Cluster 3 were more similar during hierarchal cluster analysis then Cluster 2 for the five behaviours used during cluster analysis. Additionally, they also reported the lowest effort in the home (3.47).

For the eight specific tourism accommodation behaviours, they had the lowest mean for efficient showers; not waiting for the right temperature; taking one or fewer showers/baths in a day; and, stopping the taps while brushing teeth. Each of these behaviours has the common theme of running taps. While each of the other behaviours measured in this research are not directly related to letting taps run longer then needed. Since behaviours involving taps are thought to be habitual (DEFRA, 2008; Miller, Merrilees and Coghlan, 2014) this may explain the lower effort in the home and a need to also target this cluster in that site of practice.

Cluster 2 scored highest in all four counter-water efficiency attitudes: 'luxury means using as much as I like;' 'I paid, so I will use as much as I like;' 'It's the accommodation providers' responsibility to save water, not the guests;' and, 'I believe that if I try to reuse my towel(s) more than once they are changed anyways.' Finally, they also scored lowest in 'saving water positively affects my experience.'

Since their attitudes were more negative than other clusters, it may have been assumed that the group would score lowest for how initiatives may affect their experience. Instead their positivity to initiatives scored between Cluster 1 and Cluster 3, except waterless urinals in which they scored highest and money-off vouchers in which they scored lowest. Figure 6.13 presents the scores for initiatives within this group to better understand potential targeted efforts. With regard to messaging, the previous trend continued, where they consistently scored between Cluster 1 and 3. The exceptions were the messages pertaining to 'Other guests' and 'child focused,' where they scored highest (more likely to be encouraged). Again a trend emerged where the location for messaging consistently scored between Cluster 1 and 3, with one

exception. Messages delivered verbally (24%), while still relatively low, were significantly higher for this cluster then other groups.

Summarizing this group, it was the youngest with the most amount of households with children. Individuals in this cluster stayed in tourism accommodation most often for business and visited friends and relatives more often during their last stay. Additionally, they placed the highest level of importance on all water-demanding services. They had the lowest overall effort both in the home and in tourism accommodation and the highest counter-water efficiency attitudes. Though, generally, they responded that initiatives and messages have a moderately positive affect on their experience (between Cluster 1 and Cluster 3). Together their high desire for services, relatively negative attitudes and low effort to save water may suggest this group placed the highest expectations on the tourism accommodation experience with regard to water. However, their moderate-high level of receptiveness to participate may have also indicated that they would engage in an exchange for changing said behaviour. Said another way, this cluster was potentially unaware of the importance of turning off taps and conserving water but also moderately receptive to the prosed initiative aiming to change their behaviour.

6.7.5 Cluster 3: 'Disengaged'

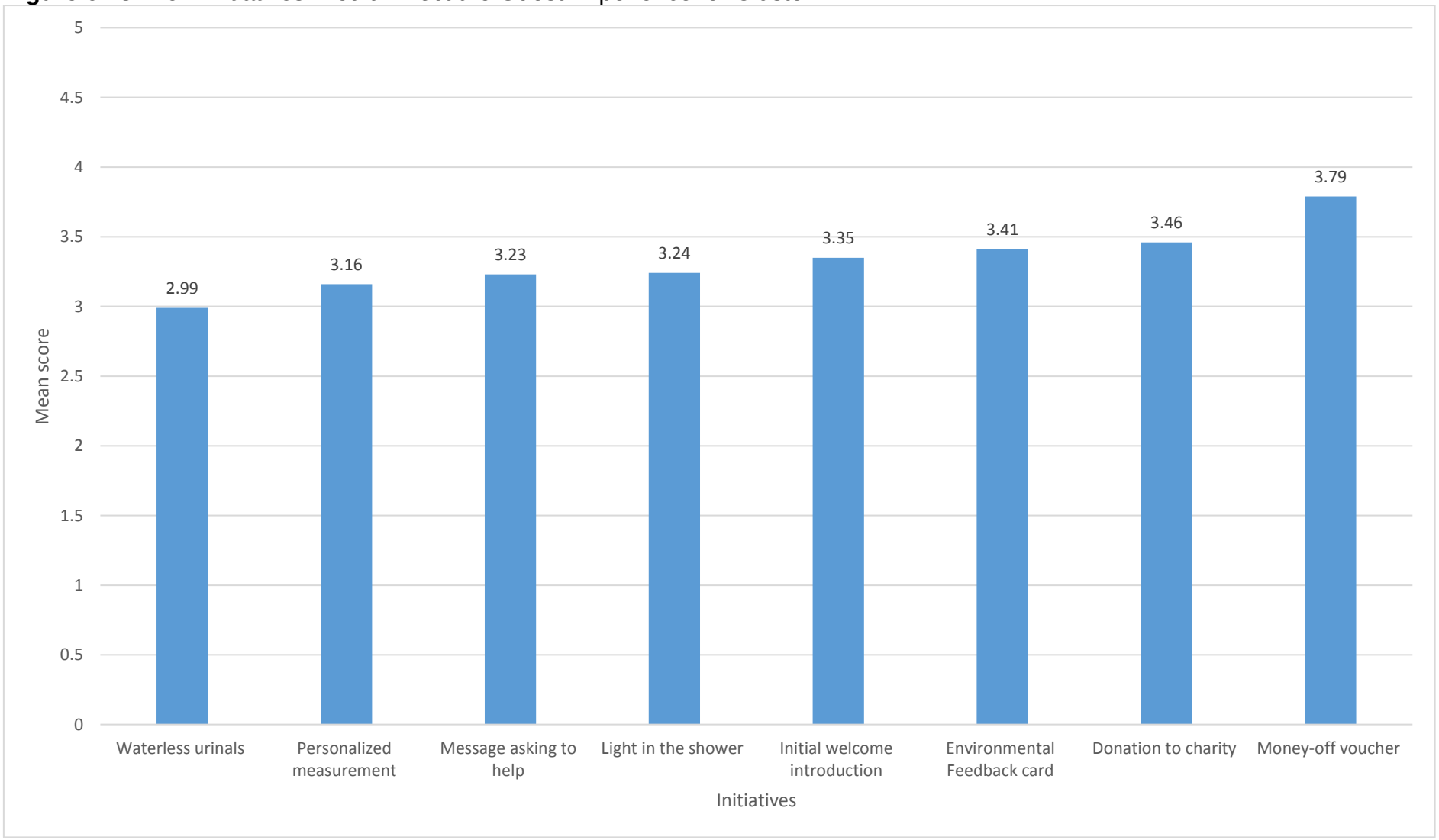
This group had an average age (36.5) and amount of households with children (41%) between the values for Cluster 1 and 2. Similarly, values for visiting friends and relatives and average nights in a tourism accommodation per year for business/work (3.49) also fell between the values of Cluster 1 and 2.

Cluster 3 reported a moderate effort to save water in the tourism accommodation and home with values between that of Cluster 1 (highest effort) and Cluster 2 (lowest effort). They did not score between the other clusters for each behaviour as perhaps expected from their values on overall effort. Instead, they scored lowest for showering instead of baths to save water; participating in towel reuse schemes; and, preference to stay in green accommodation. In other words, they ranked lowest in all behaviours not associated with directly letting a tap run more than needed with one exception. They reported the highest value for taking one or less showers/baths per day than any other group.

Values for attitudes related to water efficiency were also not strictly between Cluster 1 and 2. Instead, they were least likely to apply what they learned back at home. They were most likely to disagree that they used less water than other guests (though still highly agreed). And they were the least sceptical of towel reuse schemes.

Cluster 3 ranked lowest of the three clusters (interventions having a negative effect on their experience) for every intervention except money-off vouchers where they ranked in the middle. While on average they rated six of the eight interventions as having a positive effect on their experience, this lowest ranking among clusters is substantial. Figure 6.14 presents their responses to initiatives to aid in understanding how to potentially target this group. The trend of reporting lowest for interventions continued with messaging. Here they reported the lowest amount of encouragement from each of the five messages. For where message would have the most impact, they scored lowest for each location except bathroom (ranked in the middle) and no message would encourage me (ranked highest).

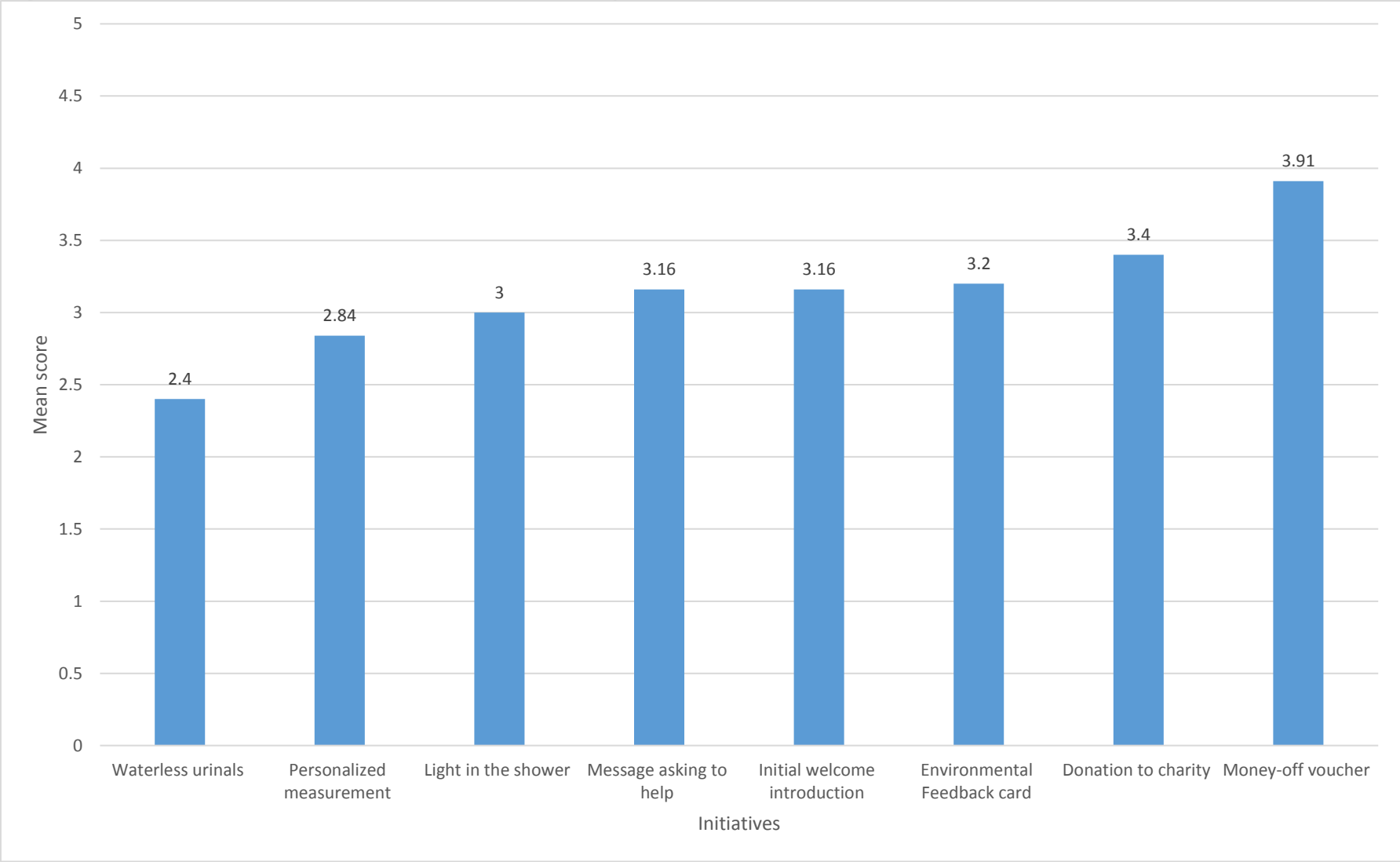
Figure 6.13: How Initiatives Would Affect the Guest Experience for Cluster 2.



Note: Items measured on a scale from 1 (very negatively) to 5 (very positively)

Source: Author.

Figure 6.14: How Initiatives Would Affect the Guest Experience for Cluster 3.



Note: Items measured on a scale from 1 (very negatively) to 5 (very positively)

Source: Author.

In summary, this cluster was between Cluster 1 and 2 with regards to age, number of households with children, visiting friends and relatives and nights stayed in tourism accommodation for business/work. They reported a moderate overall effort to save water in tourism accommodation and at home. Their attitudes were variably higher and lower then Clusters 1 and 2 with no real trend emerging. And they reported the least positivity for all initiatives, except money-off vouchers, and the lowest values for encouragement from every message. This low effort and low positive response to initiatives may indicate that the group was the least engaged in water efficiency and the least willing to be engaged in the future. The highest ranking for 'none, no message would encourage me', while admittedly still low, is further evidence that this cluster may be generally 'disengaged' and less receptive to making an exchange for their behaviour.

6.8 Chapter Summary

A questionnaire pertaining to water efficiency behaviour in the home and in tourism accommodation was sent to a third party internet panel with a response of 408 completed surveys. First, efforts to save water in the home were measured (research question 2.1). Effort to save water in the home was significantly higher for individuals older in age, having a water meter and owning their home. In total, eleven behaviours were examined with not waiting for water to reach a desired temperature, buying water efficient appliances and using rainwater receiving the lowest scores for their frequency of occurrence.

In tourism accommodation, eight behaviours were measured (research question 2.2). The behaviours of not waiting for the water to reach the desired

temperature and preference for a green tourism accommodation had the lowest mean values. No significant difference was seen between demographic variables and overall effort to save in tourism accommodation. However, the average number of nights stayed in tourism accommodation for business or work showed a significant relationship with individuals staying more nights also reporting a higher effort to save water. Attitudes concerning saving water in tourism accommodation were also investigated (research question 2.2). High scepticism of towel reuse schemes, changing towels even when guests participated, was reported. Additionally, there was low willingness to pay for water efficient accommodation and a curiously high rate of individuals agreeing that they used less water than other guests.

Open ended questions allowed participants to freely write about the barriers and drivers for saving water in tourism accommodation. A high amount of individuals stated they had no barriers. Other frequently reported barriers were limitations to facilities and attitudes of entitlement of water. The most frequently stated driver was again 'nothing' though substantially less individuals stated this then for barriers. After this response, the most frequently reported drivers were providing incentives and information on the importance.

Participants were asked their effort at home compared to in tourism accommodation (research question 2.3). A Wilcoxon test showed a significant difference between behaviour at home and behaviour in tourism accommodation. This result represents significant behavioural flipping which indicates the tourism accommodation is a necessary location for intervention as guests do not 'pack' their water efficiency behaviour with them from home. However, not all behaviours showed significant flipping and therefore continue

education programmes in the home are needed to also promote water efficiency within tourism accommodation.

Out of eight initiatives to promote water efficiency, money-off vouchers and donations to charity for participation in towel reuse schemes showed the highest positivity to the guest experience. A feedback card and having the environmental efforts highlighted during the initial welcome were third and fourth. Interestingly, messages requesting participation were fifth, which has received substantial attention in the academic literature.

Specific messages were also examined for the extent to which they would encourage saving water. The most generic message, 'promote,' received the highest score. The messages, not previously examined in the literature: climate change and scarcity were ranked second and third. The manager created child focused message received the lowest score. However, individuals with children in the household reported a significantly higher encouragement from this message than those without children in the household. Therefore, this message may be well received in tourism accommodation catering to families. Messages were reported to have the highest impact on the participant if located in the bathroom, in the welcome invitation and then on a website.

Cluster analysis was conducted with five water efficiency behaviours in the tourism accommodation with three distinct clusters emerging (research questions 2.4, 3.1 and 3.2). Cluster 1 contained individuals that reported the greatest effort and attitudes towards saving water and labelled 'most conscientious.' Cluster 2 was composed of individuals with the lowest overall effort and lowest effort in turning off taps. Their desired services and combination of behaviours and attitudes indicated they may have the highest

needs and potentially place greater importance on the holiday experience. They also reported moderate levels of positivity towards interventions and impact of messages. Due to their use of water from taps, which is consumed openly and apparently, they were labelled ‘overt users’.

Cluster 3 reported moderate levels of effort to save water compared to the other clusters. Specifically, they reported low efforts toward non-tap related behaviour (e.g. towel participation, preference for green accommodation, etc.). They reported low agreeability to certain attitudes, generally lowest desire for services and least positivity to interventions (excluding money-off vouchers) and could therefore be considers ‘disengaged’ in participating in water efficiency effort.

With ‘lifestyle’ segments now identified, it would also appear sensible, if resources allowed, to target both Cluster 2 and 3 at the same time as the initiatives they were most receptive to overlapped. However, if resources are scarce, Cluster 2 may be the most likely group to target as they had some of the lowest effort and yet moderate amounts of receptiveness to intervention. In contrast, Cluster 1 would most likely participate in any proposed intervention and Cluster 3 appears least likely to participate. Though due to the second Cluster’s relatively negative attitudes and low effort in the home, additionally targeting this group in the home to educate them on the importance of water and water conservation would also seem needed.

In order to evaluate and prioritize outcomes from Stage One through Three a Delphi consultation was conducted. The following chapter presents the results of this consultation and discusses results in context of the literature from the literature review chapters.

Chapter Seven- From Delphi to Discussion

7.1 Introduction

A Delphi consultation was conducted to assess the effectiveness of potential social marketing initiatives aiming to encourage water efficiency within the tourism accommodation industry (research object four). To achieve this, first, ideas from managers in Stage One and Two and responses from guests in Stage Three of the methods were analysed. Ten potential initiatives to promote water efficiency in the tourism industry of South West England emerged (research question 3.4). Of the ten potential initiatives, five aimed to change guest behaviour and five targeted manager behaviour. They are described in detail in the following section. Initiatives were presented to the Delphi panel aiming to evaluate the effectiveness of each initiative to change behaviour; rank potential initiatives in order of priority for implementation; and, to measure the factors used by panellist to prioritize implementation (research question 4.1).

Focus will then shift to discussing the results from all four stages of the methods within the context of the literature. Continuity in accessing potential initiatives between each stage of the research will be examined (research question 4.2). Ultimately, this examination will lead to a discussion of their implications for the field of social marketing (research question 4.4).

7.2 Potential Initiatives from Previous Stages

In order to present outcomes to the Delphi panel for evaluation, potential initiatives were first explained. Initiatives were informed through findings from the focus groups and interviews with tourism accommodation managers. Next, the guest questionnaire provided vital information on how each initiative may impact the guest experience. In an effort to build through a linear and logical progression, initiatives were shaped through the literature review with special attention toward the five attributes of social marketing, which were: 1. Defining the behavioural goal(s); 2. Segmenting the audience; 3. Using a marketing mix of messages (P's: product, price, place, promotion, people and policy); 4. Considering the importance of the exchange; and, 5. Incorporating balance between competing factors for behaviour.

In some cases, initiatives represented ideas explicitly explained by managers, while in other cases, they were adaptations to such ideas. Ultimately, an effort was made to allow these initiatives to emerge organically from key stakeholders while also ensuring the social marketing attributes were respected. Following is an explanation of each of the ten potential initiatives evaluated in the Delphi consultation. For simplicity, initiatives are separated into those targeting guests and those targeting managers.

7.2.1 Proposed Initiatives Targeting Guest Behaviour

7.2.1.1. Feedback Cards

Managers brainstormed the idea of environmental feedback cards where guests create solutions to improve the accommodation's environmental efforts. In

Stage Three of this research, guests reported a high positive impact on their experience from being provided with feedback cards. Cards would be situated in each room and may encourage efficient behaviour by including guests in creating solutions. Returning to the theoretical framework for defining interventions by Steg and Vlek (2009), feedback cards would be considered consequential and informational because they would most likely be completed after the stay and involve no changes to the structure of the accommodation.

7.2.1.2 Initial Welcome Introduction

As reported in Stage Two of this research, some managers have begun verbally incorporating their environmental efforts into their initial welcome to ensure the guest knows they care for the environment. They hope this in turn establishes an expectation of caring for the environment and is an invitation to join the business in their efforts. During the welcome, managers would highlight different initiatives such as their towel reuse scheme or a water efficient appliance when explaining how to use and access things throughout the premises. Managers practicing this initiative reported increased customer engagement throughout the week and more care for resources (though these are anecdotal). Guests reported this would have a high positive impact on their experience in Stage Three, scoring fourth of eight initiatives. Additionally, this effort may be effective in reaching the target audience, Cluster 2: 'overt users,' whom scored highest for verbal communication being an effective messaging strategy, albeit still low (24%). Steg and Vlek (2009) may consider this initiative antecedent and informational as it aims to change behaviour prior to occurring through lines of communication.

7.2.1.3 Incentives

Some larger businesses have begun providing rewards or donating to charity when guests participate in towel reuses schemes (e.g. Starwood Hotels and ACCOR). In Stage Three, guests reported rewards and then donations to charity would have the highest positive impact on their experience of all proposed initiatives. However, due to the size of many tourism accommodations in the South West, managers, in Stage Two, stated they did not have the infrastructure to support such an initiative. A potential solution is a region wide scheme, run by a third party (e.g. company or non-profit), allowing businesses to offer small vouchers (e.g. £5 off) for their next stay or donations to charity if individuals sign a commitment to joining the business in their efforts to save water and energy during their stay. This would be a public commitment on a third party website during the booking phase, or during, their stay at the accommodation. Charters outlining how to be good visitors already exist in some parts of the South West and could be used as an outline for the commitment. This would be categorize as consequential and structural as it applies rewards after the behaviour has been completed.

7.2.1.4 Remove Competing Behaviours

This initiative aims to remove barriers and competing water consumptive behaviours in the tourism accommodation to make saving water easier for guests. For example, of all water wasting behaviours measured in Stage Three, guests reported the highest occurrence of allowing taps to run until the desired temperature was reached. Guests also stated limitations in the facility were a barrier to saving water. Therefore, implementing instant hot water heaters, also

known as 'on-demand', systems could reduce the amount of time taps run between waiting for the temperature to change. Additionally, as an example, guests reported a relatively low importance of a bath in making their last tourism accommodation booking. As highlighted in Stage Two, managers are aware of this low desire and the fact that baths use substantially more water than showers. As a result, some accommodation managers in this study reported removing them from their facilities to ensure guests use showers and not baths. These are only two examples while other examples could include: defaulting to only providing one towel per guest for their whole stay unless they specifically request another; low flow appliances such as shower heads, tap aerators and toilets; and, separate cold and hot taps to make changes in temperature quicker. Removing competing behaviours could be categorized as antecedent and structural. That is, it aims to change behaviour prior to it occurring by altering availability to the target audience.

7.2.1.5 Child Focused Messages

Of all initiatives reviewed with managers in Stage Two, the strongest interest was reported for messaging to guests, asking them to help save water. However, in Stage Three, guests reported a relatively low positive impact on their experience from this initiative. Managers reviewed past messages and reported they were too 'boring' and rigid. Their idea was to target children with messages and in turn potentially have kids affect the behaviour of their parents. These messages would aim to be ‘fun’ and would be distributed as stickers to place in tourism accommodation bathrooms. This

initiative would be considered an antecedent informational intervention, as it aims to change behaviour before it occurs through education.

7.2.2 Proposed Initiatives Targeting Manager Behaviour

7.2.2.1 Meaningful Units of Measurement

During Stage Two, several managers expressed that using water by the cubic metre had very little meaning to them. One manager suggested that if the unit of measurement was in financial terms (£), smaller units (litters of water) or something more relatable, their water bill would be more meaningful and potentially affect how they managed it within their business. Bills could compare monetary value and a facial expression. For example, a happy face would show you are saving more water, and money, than your neighbours and a sad face would show the opposite. This type of alternative unit of measurement would be used with businesses to encourage more stringent water management. Such an initiative would aim to change behaviour after it occurred (antecedent) and involve communication and education (informational).

7.2.2.2 Green Business Scheme

Many managers participating in this study were involved in green tourism certification schemes. Overwhelmingly, in both Stage One and Two, they reported feeling their certification had not brought them a single booking. One idea presented by a managers in Stage Two was to increase the services provided by certification programs (e.g. Green Tourism Business Scheme and

VisitEngland's star rating) or create a new certification scheme offering additional services. These services could include access to customer lists; promotions; top tips; inclusion into buyers' clubs and low cost water/energy audits along with the normal certification. For reference, buying clubs are groups formed to pool members' collective buying power, enabling them to make purchases at lower prices than normal. This may be categorize as a consequence strategy applying structural framing because it aims to reward managers after they have joined the scheme with incentives.

7.2.2.3 Low Interest Loans

In Stage One and Two, initial investment costs were identified as a major limitation to implementing water efficient technologies and potential initiatives. Small loans at low interest rates for technologies with short payback periods could promote businesses to invest in water efficient technologies (e.g. low flush toilets, washing machines, solar water heaters, etc.). Such loans could be offered by buying clubs or by other water related stakeholders (e.g. water companies, DEFRA, etc.). Low interest loans would be considered an antecedent structural intervention as it aims to promote purchases prior to being made through financial incentives.

7.2.2.4 Green Ambassadors

Several managers in Stage Two expressed a desire to act as a spokesperson for water efficiency to other tourism accommodation managers. A system would be established to aid volunteer managers to host an open house with

other tourism accommodation managers to share their successes and discuss ideas for managing resource use. While similar peer to peer networks exist in some areas, this effort could increase their exposure and create a means for new connections specific to water. Additionally, managers stated they did not trust many of the sources of information trying to sell them on certain technologies and practices. Thus, the face-to-face networking would allow peers to exchange ideas and best practices in a trusted environment. Such an initiative may be considered an antecedent informational intervention as it aims to change manager behaviour through education and modelling.

7.2.2.5 Increased Academic Collaboration

In Stage Two, when asked about previous academic research on water efficiency, every participating tourism accommodation manager reported they had no previous exposure to such findings. This was not due to a lack of curiosity, as interest was very high, but instead a lack of availability. This initiative would call for both an increase in academic research directly with water related stakeholders and the dissemination of findings through 'open sources,' presented in 'non-academic speech', to increase the impact of such work. Finally, this initiative may be categorized as an antecedent informational intervention as it aims to provide information to managers prior to implementing changes.

7.3 Delphi Results

7.3.1 Effectiveness of Each Initiative

To determine how each initiative may affect the behaviour of key stakeholders within the tourism accommodation, five point Likert scales from strongly disagree to strongly agree measured agreement to the perceived likelihood the initiative would increase water efficiency behaviour. Participants were also provided the opportunity to make comments. Table 7.1 shows the results from both rounds of surveying for each initiative in descending order by highest mean score in round two. Note, a higher mean indicates the panel felt the initiative would have a higher impact on changing behaviour.

To measure consensus, again, interquartile range was used, where a 1 or less indicated consensus. The percentage agree or disagree was used to indicate direction of that consensus. In all instances, except child focused messages, an interquartile range of 1 or less was seen for all initiatives in round two. Child focused messages had an interquartile range score of 2 and no clear direction of whether it would change behaviour (47.4% agreed; 36.8% disagreed in round two). This shows that no clear consensus was reported on this issue. However, comments revealed that this may be due to the initiative being contextual; that is, several panel members commented that child focused messaging would only be appropriate in an accommodation catering to families.

With regard to all other initiatives, the direction in agreement and interquartile range suggests consensus that they would all change behaviour, excluding feedback cards. Feedback cards received a higher disagreement (42.1%) than agreement (10.5%) indicating that the panel came to consensus that it would not change behaviour to promote water efficiency. Additionally, the initiatives of ‘increased academic collaboration,’ ‘green business schemes,’ and

‘child focused messages’ all scored below a 50% for agreement (though still more participants agreeing than disagreeing) that they would change behaviour. This may suggest that the panel, while in consensus that they did change behaviour, believed they would have less impact than other initiatives.

Table 7.1: Delphi Panel’s Agreement that Each Initiative Would Strongly Change Behaviour.

Initiative	Survey Round	Mean	% Agree	% Disagree	Interquartile Range	Direction of comments
Remove Competing Behaviours	1	4.19	85.7%	4.8%	1	Positive
	2	4.32	94.7%	5.3%	1	Positive
Green Ambassadors	1	4.43	95.2%	0%	1	Positive
	2	4.21	89.5%	0%	1	Positive
Meaningful Units of Measurement	1	3.95	76.2%	14.3%	2	Positive
	2	3.79	72.7%	10.5%	1	Positive
Initial Welcome	1	3.9	76.2%	9.5%	1	Positive
	2	3.74	78.9%	5.3%	0	Positive
Low Interest Loans	1	3.76	80.9%	14.3%	0	Mixed
	2	3.74	63.2%	5.3%	1	Positive
Incentives	1	3.62	71.4%	19%	1	Mixed
	2	3.58	63.2%	10.5%	1	Positive
Increased Academic Collaboration	1	3.71	66.7%	29.1%	2	Mixed
	2	3.42	47.5%	15.8%	1	Negative
Green Business Scheme	1	3.29	47.7%	29.1%	1	Mixed
	2	3.16	26.3%	21.1%	1	Negative
Child Focused Messages	1	3.19	38.1%	28.6%	2	Mixed
	2	3.11	47.4%	36.8%	2	Negative
Feedback Cards	1	2.9	33.3%	28.6%	2	Negative
	2	2.68	10.5%	42.1%	1	Negative

Source: Author.

7.3.2 Importance of Factors on Ranking Initiatives

To establish what influenced panel members to rank initiatives in a given order, ten factors were scored on a five point Likert scale from very unimportant to very important. Table 7.2 presents the results with factors in descending order by mean score in the second round. The higher the mean score, the higher the importance was placed upon the factor.

Again, an interquartile range of 1 or less was used to establish consensus. To understand direction, the percentage of individuals reporting it was unimportant versus important was used. For every factor, consensus was reached in round two. While every factor was reported to be important, and the comments also supported this observation, some clearly scored higher than others.

Results show the panel placed the highest importance on focusing on changing guest behaviour (downstream), indicated by the highest mean score for 'likelihood to change guest behaviour' (4.68). This was followed by practical concerns such as feasibility (4.63), financial costs (4.32), likelihood to have a negative effect on the guest experience (4.37) and desire for businesses to implement the initiative (4.26). Then the panel prioritized changing business (mid-stream) practices (4.05). More theoretical issues were then prioritized such as established evidence that the initiative would be successful (3.89), overall water saved (3.89) and ability to measure project success (3.74). Finally, the factor of having high stakeholder support (3.32) which could be considered an effort to incorporate upstream partners, received the lowest score.

Table 7.2: How Important a Given Factor was in Ranking Initiatives.

Factor	Survey Round	% Important	% Un-important	Mean	Inter-quartile Range
Likelihood to change guest behaviour	1	95.2%	0%	4.43	1
	2	100%	0%	4.68	1
Feasibility of implementation	1	95.2%	4.8%	3.95	2
	2	100%	0%	4.63	1
Likelihood to have minimal negative effects on the guest experience	1	81%	4.8%	4.33	1
	2	89.5%	0%	4.37	1
Financial costs	1	95.3%	0%	4.24	1
	2	94.7%	0%	4.32	1
Desire of tourism accommodation businesses to implement	1	95.2%	4.8%	4.24	1
	2	94.7%	0%	4.26	1
Likelihood to change businesses' management of water	1	90.5%	0%	4.29	1
	2	84.2%	0%	4.05	0
Previously established evidence supporting positive outcomes	1	81%	0%	4.24	1
	2	73.7%	5.3%	3.89	1
Overall amount of water likely to be save through the initiative	1	85.7%	9.5%	4	1
	2	73.7%	0%	3.89	1
Contains measureable outcomes for evaluation purposes	1	81.1%	14.3%	3.76	0
	2	63.1%	0%	3.74	1
High level of support from other stakeholders (e.g. Government, non-profits, water companies, media, etc.)	1	42.8%	14.3%	3.42	1
	2	47.4%	21.1%	3.32	1

Source: Author.

7.3.3 Ranking initiatives

The panel was also asked to rank initiatives based on priority for implementation. Table 7.3 presents the findings from both rounds with initiatives in descending order from most to least prioritized using a weighted score. Initiatives did not change in ranking from round to round indicating consensus on the issue. While interquartile range was not used due to a lack of support in the literature for this method, the values decreased in every instance from round 1 to round 2 also indicating a shift toward consensus. Removal of competing barriers was ranked highest while increased academic collaboration was ranked lowest.

Table 7.3: Ranking of Proposed Initiatives Based on Priority for Enactment.

Initiative	Survey Round	Interquartile Range	Weighted Score	Overall Ranking
Remove Competing Behaviours	1	5	159	1
	2	0	186	1
Initial Welcome	1	4	147	2
	2	2	149	2
Incentives	1	5	139	3
	2	1	147	3
Green Ambassadors	1	5	137	4
	2	2	126	4
Meaningful Units of Measurement	1	4	119	5
	2	3	107	5
Feedback Cards	1	5	109	6
	2	1	85	6
Low Interest Loans	1	7	98	7
	2	3	80	7
Green Business Scheme	1	3	91	8
	2	2	61	8
Child Focused Messages	1	3	89	9
	2	3	58	9
Increased Academic Collaboration	1	4	77	10
	2	2	46	10

Source: Author.

7.4 Discussion of Potential Initiatives

7.4.1 Remove Competing Behaviours

Through an extensive review of the literature, the removal of barriers and potential competing behaviours was identified as a key attribute to the social marketing process (French, *et al*. 2010; Corner and Randall 2011; Shaw, *et al.* 2013). Additionally, Miller, *et al.* (2014) find removal of barriers can increase environmental behaviour on holiday.

From focus groups in Stage One and interviews in Stage Two, most managers stated they strongly agreed that 'taking care of it in the back of house' was a way to avoid conflict and detriment to the guest experience. This initiative was presented indirectly to the guest in Stage Three through numerous questions aiming to measure barriers and desire for certain water consumptive services. Specifically, the behaviour of 'I do not wait for the right temperature' was meant to measure if guests allowed the shower or taps to run until they were at the desired temperature, representing a potential barrier to efficient use. Results showed guests reported the lowest effort for this behaviour of all behaviours measured in this study. Slow changes in water temperature could therefore be seen as a potential barrier to water efficiency. Additionally, guests were asked how certain services influenced their last booking. Relative to other services, guests reported a low desire for baths (second lowest mean score) but high desires for fresh towels and linens daily (second and third highest mean score). Since towels and linens are potential areas for removing barriers (perhaps through mandating one per stay) this may suggest that when removing competing behaviours, managers need to take care to balance efficiency and deterioration of the guest experience. In Stage One and Two,

managers stated they were confident in their understanding of their particular clients' expectations. For example, managers of self-catering establishments stated their clients expected to bring their own towels and that linens were only changed weekly or every other day. Therefore, it would appear this balance between efficiency and deteriorated guest experience may be specific to the type, size and clientele of the tourism accommodation.

Finally, the Delphi consultation ranked this initiative first in priority of implementation with only 5.3% of the panel disagreeing it would have a high impact on behaviour. Within the Delphi survey, the two examples provided for reducing barriers where removing baths and decreasing the time it takes for water to change temperature. Comments mostly supported these two examples, though other areas for removing barriers also exist. Through investigation of the literature and results of Stage One through Four, overall, this initiative appears to have strong support from stakeholders. However, it is important to note that there is a need to ensure the guest experience is not greatly impacted to an objectionable degree when implementing this initiative.

7.4.2 Initial Welcome Introduction

This potential initiative had not been investigated in the literature to date. However, it does incorporate some strategies presented in Chapter Two or this thesis. Specifically, it allows the manager to role model the desired behaviour, as explained by Steg and Vlek (2009), by showing the guest that the accommodation is actively working towards efficiently using water and thus inviting the guest to join. Gössling, *et al.*, (2015) support the use of this strategy in promoting water efficiency within tourism accommodation, referring to it as

the ‘crowding-in’ effect. The manager may also have the opportunity to help people see themselves as environmentally concerned (i.e. comment on their past actions) which McKenzie-Mohr, *et al.* (2011) identify can substantially increase participation. However, the extent to which managers want to explain their efforts is an important issue. As Font, *et al*. (2016) explain in their work on ‘greenhush,’ managers are reluctant to share their efforts towards contentious environmental issues (e.g. climate change) publicly. It will therefore be up to the managers to best understand their clientele when crafting this message and any declarations of their efforts.

During Stage One and Two with managers, this initiative was described by two participants. It was then discussed with other managers that followed these two interviews. Perhaps not surprisingly, managers valued this initiative, and the other two presented by managers, higher than others from the literature. Whether this was to conform to their peer group or because it was truly more viable was not resolved. However, the managers whom had already implemented this initiative reported it highly encouraged water efficiency among guests. These claims are needing to be verified with empirical evidence.

Guests reported a relatively high positive impact on their experience from this initiative, scoring third highest of eight initiatives. However, when guests were segmented into water users, those segments needing most encouragement to change their behaviour (i.e. clusters ‘overt users’ and ‘disengaged’) ranked it fourth behind feedback cards. This was still higher then messages asking them to participate which have received substantial amounts of attention in the literature. Additionally, the ‘overt users’ (Cluster 2) were recommended to be targeted if resources were scarce. This group stated verbal request would change their behaviour significantly more than other

clusters. Therefore, while not as highly regarded as incentives or donations, guests showed a high level of support for this type of initiative.

Finally, the Delphi panel also reported a high level of support for this initiative, ranking it second for priority. Comments provided for this initiative were positive and only 5.3% disagreed it would have a high impact on changing behaviour. Therefore, this initiative received high support from stakeholders and is well supported by recommendations within the literature. However, since success in changing behaviour was not supported by empirical evidence, further studies, preferably experimental in design, are needed to discover the degree to which this initiative would be truly effective.

7.4.3 Incentives

Shang, *et al.* (2010) find donations to charity for participation in towel reuse schemes significantly increase guests' perceptions of a hotel's values, attitudes toward the hotel, and behavioural intentions. In their work, money-off vouchers also showed a significant increase in these values, however, less then donations to charity. The prioritization of donations over money-off vouchers is also supported by Frey and Jegen's (2001) 'motivational crowding' theory, which states that over long periods of time, tangible incentives (vouchers, money, gifts, etc.) may lead to lower efforts to engage in a behaviour compared to acting on intangible motives (social capital, moral and ethical reasons, etc.). However, Mair and Bergin-Seers (2009) find no significant increase in participation in towel reuse schemes when a donation is offered. Importantly through, this may be due to the difference between offering a future or a past donation in exchange for the desired behaviour. Goldstein, Griskevicius and

Cialdini (2007) and Shang, *et al.* (2010) also find a promise of a future donation does not change behaviour. Instead, reciprocal donations (i.e. 'we have donated a certain amount already thanks to our expected savings') significantly increased participation. Though importantly, to date, providing money-off vouchers has not be studied experimentally and therefore data has relied on reported intentional data. Overall, the literature may be viewed as mixed in its support of future donations (as presented in this research) and money-off vouchers.

No disagreement was seen in Stage Three, where guests scored money-off vouchers as positively impacting their experience above donations to charity, however, they scored first and second respectively showing a strong support for the use of incentives (either money-off vouchers and/or donations to charity). In Stage One and Two, managers sighted several key barriers to implementing this initiative. Specifically, managers stated financial costs; low ability to account for participation due to a lack of computerized systems; and, low staff numbers to manage such an initiative.

Due to the reported high positive impact on the guests experience and low interest by managers, this initiative was altered prior to being presented to the Delphi panel. To alleviate manager stated barriers, the incorporation of a third party (e.g. a non-profit or for profit company) would run this scheme in collaboration with businesses. Additionally, to alleviate the theory of 'motivational crowding' the third party would offer the guest the option of a donation or money-off voucher. The Delphi ranked this initiative third in priority and only 10.5% disagreed it would have a high impact on behaviour. Of those panel members disagreeing on the impact, comments indicated it was due to a need to see the scheme in practice. This criticism highlights an important issue

regarding this initiative. No third party currently exists to assume the role of facilitator between guest and accommodation. While this initiative showed mixed support from the literature and stakeholders in this research, this important logistical concern needs to be addressed for incentives to be a viable option.

7.4.4 Green Ambassadors

Examples of green ambassador programs could not explicitly be found in the academic literature. Though examples of them, such as efforts by the non-profit CoAST network have existed in practice (CoAST, 2016). However, Coles and Zschiegner (2011) research the impacts of formal networks on efforts of SMTEs in South West England to mitigate climate change. They found no difference between efforts by SMTEs in networks and those not in networks, though they argued networks aid in knowledge spill-over, that is, sharing of ideas outside of the formal network. While they acknowledge that ideas are freely shared over the world-wide-web, they also highlight that face-to-face collaboration between managers is an important aspect to forming new environmental management practices.

During Stage One and Two, managers stated they were sceptical of tradesmen trying to sell them technologies and other products. They showed a higher regard for the opinions and efforts of their peers. One manager even suggested he would like to be a green ambassador for water to highlight his efforts and mentor other managers. As subsequent interviews were conducted, other managers stated a high level of support for this initiative. Since guests

would have little direct interaction with this initiative it was not included in the Stage Three questionnaire, and therefore this stage is not used in this analysis.

Experts in the Delphi consultation prioritized this as the fourth most important for implementation. Of the initiatives targeting manager behaviour, it was ranked highest. Comments for this initiative were mostly positive. However, one panel member reported this type of initiative had been previously conducted by a local non-profit, the CoAST network, and has since stopped. Another panel member suggested that managers are busy and finding the time to attend such events could be difficult. This may represent the greatest barrier to this initiative and therefore the value of attending would need to be clearly presented to tourism accommodation managers for this initiative to be successful. If this barrier can be overcome, synthesis between the literature review and results from this research suggest positive outcomes for this initiative.

7.4.5 Meaningful Units of Measurement

An example of this effort with domestic customers is the US company Water Smart Software, whom found a 5% reduction in water use among customers (MARKETPLACE, 2014). It is important to note that this claim of reduction was not verified by a third party and may solely represent a business promoting their product. Additionally, no examples of changing units with tourism businesses could be identified. The difficulty of measuring water use within and between tourism accommodation, as reviewed in Chapter One of this thesis, may explain why such efforts have been limited to residential application only. These difficulties include, variations in occupation rates, physical size of the

accommodation, varying services provided and level of luxury provided or expected.

In Stage Two, managers supported the idea of using more meaningful units on their bills to inform them of their water usage. The use of facial expressions, cost and or smaller units of measurement were all generally supported as potential upgrades to their current billing information. The Delphi panel was also very supportive, ranking this initiative fifth overall and second among initiatives directed towards managers. They scored it second highest in impact on behaviour (89.5% agree; 0% disagree). However, comments indicated practical concerns which are outlined above. Since this initiative did not directly include guest interaction, they were not surveyed on the issue in Stage Three.

If measuring water within tourism accommodation can be done to create units useful for comparison, then this initiative would appear to have mostly positive synthesis between sections of this research. However, it should be stressed that comparing across businesses represents a substantial barrier which has not yet been overcome. An alternative may be to focus on comparisons within the same business over time. While this will not create competition between firms it could motivate businesses through theories such as loss aversion (Kahneman and Tversky, 1979), a greater desire to not loss something then gain it, if presented properly.

7.4.6 Feedback Cards

While Gössling, *et al.* (2015) have cited and championed an example of this initiative in practice, no empirical evidence exists that it is effective in changing

guest behaviour. Note the publication of this reference occurred after the manager interviews and therefore feedback cards were, at the time, considered a novel idea by the author of this thesis. However, this type of interaction between the business and guests could be considered a form of co-creation which Shaw, *et al.* (2013) recommend as an effective tool for creating and conducting social marketing campaigns. While guests are not present in all stages of the campaign, which is needed for co-creation, through feedback cards they would actively participate in the creation of solutions.

In Stage Two, managers proposed and showed high levels of support for the idea of feedback cards. This initiative was proposed to guests in Stage Three and they too reported a high level of support. They scored feedback cards fourth highest, third highest for segments recommended for targeting, for positive impact on their experience. However, the Delphi panel did not agree. Of all ten initiative, this initiative was the only one to receive a higher disagreement (42.1%) then agreement (10.5%) that it would have a high impact on behaviour. The panel commented that feedback cards would be overlooked by busy guests; only reach those interested; were too diverse in their application to environmental behaviour, not specific enough to water usage; and would be completed after their stay, therefore only potentially affecting future behaviour. It would therefore appear that the panel ranked this initiative low in priority due to a lack of efficacy. Therefore, guests and, to a lesser extent, the literature review support the application of this initiative, while the Delphi panel was in opposition. Clearly, more research, preferably experimental in design is needed to establish the effects of feedback cards on actual guest behaviour.

7.4.7 Low Interest Loans

According to Coles and Zschiegner (2011), financial concerns are the number one barrier to incorporating environmental initiatives to combat climate change among SMTEs in South West England. Frey and George (2010) find similar results in South Africa where financial concerns are also the number one barrier to incorporating 'responsible tourism management' among hotels. In Stage One and Two of this research, managers most frequently stated disturbing the guest experience was the number one barrier to more efficiently managing water. This was followed by financial concerns, and in particular, upfront costs compared to savings or payback periods.

The Delphi panel evaluated this initiative positively with 63.2% agreeing and only 5.3% disagreeing that it would have a high impact on behaviour. While comments were generally positive, some questioned the willingness of businesses to take on debt. As such, this initiative was ranked seventh in importance of implementation. It would therefore appear that the literature and results from this study are aligned that low interest loans could provide incentives for behaviour change. However, due to a lack of knowledge on the willingness of business in South West England to accept debt for environmental upgrades, more research is needed to clarify this issue. The Delphi comments and moderate receptiveness from business is evidence of this need.

7.4.8 Green Business Scheme

The literature suggests mixed results from green business schemes with, for example, Segarra-Ona, Peiro-Signes, Verma, and Miret-Pastor (2012) finding significant economic benefits from certification schemes in larger Spanish

tourism accommodation firms yet no difference in certified smaller firms. In Stage One and Two, several managers were active members in the Green Tourism Business Scheme. When asked about the value of these schemes, overwhelmingly managers responded that they believed it had not brought them additional customers. They instead offered that it was the right thing to do and social capital among peers were motivation for joining such schemes. The idea to expand the value of these schemes was presented by a manager in Stage Two to combat this general feeling that certifications added little economic value to the business. During subsequent manager interviews, high support for this idea was reported.

In Stage Three, guests were asked if they 'prefer certified green businesses.' This question scored second lowest of eight, suggesting that managers were correct in Stage One and Two that guests did not highly value green certified businesses. The Delphi panel mostly agreed with this sentiment, only slightly agreeing more (26.3%) then disagreeing (21.2%) that this initiative would highly change behaviour. Comments included concerns that the initiative would need to convince businesses that the scheme would be financially profitable. Other concerns focused on the lack of guest willingness to pay more and a belief that certification work better in larger companies than smaller firms. Viewed together, these results are in general agreement that this initiative is not highly prioritized and several major barriers need to change for it to be successful (e.g. guests' purchasing priorities, proving financial gains to managers and increasing the value specific to SMTEs).

7.4.9 Child Focused Messages

There is a substantial amount of literature on messaging to promote water efficient behaviour in tourism accommodation, as evidence in the literature review presented in Chapter Two of this thesis. However, no studies exist that use child focused messaging. This initiative was created and supported by managers in Stage Two of this research. However, in Stage Three, messaging ranked fifth with regard to positive impact on the guest experience out of eight initiatives. When asked how a specific message may impact their behaviour, child focused messages scored lowest of the five messages investigated in this study. While individuals with children in the house hold significantly scored this type of message higher than those without, even within this group the message scored lowest compared to other messages. It is also important to note that the message was meant to target children whom in turn would influence their parents. Since the survey was only completed by adults, these results could be misleading as they did not survey those it intends to target.

The Delphi panel also reported mixed responses for this initiative. More participants agreed (47.4%) than disagreed (36.8%) that it would highly impact behaviour. However, of all initiatives, the 36.8% disagreement was the highest level of disagreement reported by the panel. Comments were also mixed with some stating that children are likely to have little power over water usage and the message could be demeaning to adults. While others promoted the idea, commenting it could alleviate the potential negative feelings of guests by being 'fun' and 'light heartened.' Another Delphi member aptly identified that the business will know best if their clientele may or may not be respective to this message. That is, a tourism accommodation catering to families may be a more appropriate place to apply this initiative then a luxury hotel catering to

business travellers or older guests. It therefore appears to be a consistent theme between the varying stages of this research that this is a low priority initiative that could be effective in the correct context. Clearly more research into the ability for this type of messaging to change behaviour, preferably experimental in design, would aid in better understanding these issues.

7.4.10 Increased Academic Collaboration

A substantial amount of literature on this topic proposes that increased academic research is needed to promote more sustainable tourism systems (e.g. Carmona-Moreno, Cespedes-Lorente and Burgos-Jimenez, 2004**;** Bohdanowicz, 2006; Tsai and Tsai, 2008; Charara, Cashman, Bonnell and Gehr, 2011). This is perhaps not surprising as it would appear obvious that those publishing academic papers would value the research process and subsequent outcomes.

During manager interviews, every participating manager stated they had no previous exposure to research on changing guest behaviour in tourism accommodation. However, managers also reported a high desire to see such findings, indicating strong support for this initiative. While managers showed a strong interest, since this initiative had little direct interaction with guests, it was not investigated in Stage Three.

The Delphi panel's evaluation of this initiative showed mixed results. While a much higher percentage of individuals agreed (47.5%) it would change behaviour then disagreed (15.8%), comments were mostly negative and the initiative was prioritized lowest of all ten initiatives. Some comments from the panel included that academics should not be viewed as the holders of all

solutions and, conversely, some SMTE managers stated they had worked with Universities in the past and it had yielded meaningful changes in their practices. Collectively these results represent a disconnect in agreement, where the literature and managers' desire for more collaboration with academic researchers are opposed by the mixed response and low prioritization by the Delphi panel. This is especially surprising as seven individuals working in academia participated in the Delphi. This initiative represents the least amount of cohesion between the stages of this research of the ten initiatives investigated herein.

7.5 Implications for Promoting Water Efficiency

The foundation for understanding and identifying opportunities for saving water is measuring the amount and location of water use within the tourism accommodation. However, as identified in the introduction chapter, past efforts have used four varying units of measurement. Furthermore, methods for establishing water use have commonly been unreported. This is a fundamental issue facing the research and practice of managing water in this context. Standardization of methods and units are therefore needed and recommended as the highest priority in this field. It is recommended that studies ensure detailed reporting of their methods so others may evaluate and compare across locations. The unit of 'l/person/day' is most prevalent in the literature and is therefore recommended to allow comparison to the greatest number of past studies on the subject.

As previously identified, there is a need to adopt a dual effort of targeting individuals both in the home and in tourism accommodation. To better

understand specific behaviours possible for change in each location the concept of water capable, as described by CCWATER (2006), DEFRA (2009) and UKWIR (2014), can be applied to this ends. While six behaviours were measured between locations, other behaviours were identified which are specific to each location of practice and represent efforts individuals are capable of adopting. Additionally, these behaviours should not be viewed exclusively as targeting one stakeholder. Within the tourism accommodation, while initiatives targeting guests ranked highest in this research, they also involve the changing of manager behaviour. That is, managers would need to change their operations to remove barriers to behaviour, incorporate initial welcome introductions and provide incentives. Therefore, future work should engage with both midstream and downstream stakeholders and concentrate on individuals' capabilities.

As identified by Luca and Suggs (2013), applying theory to the social marketing process is key to its success. The initiatives receiving the highest level of support and continuity (i.e. removal or barriers to behaviour, initial welcome introduction and green ambassadors) each rely heavily on, and are promoted through, the application of theory and techniques, previously reviewed in Chapter Three. One relevant technique present in each of these initiatives is modelling, as promoted by Steg and Vlek (2009). For example, removing barriers to behaviour applies modelling by allowing the business to indicate to guests that they are making an effort. The initial welcome introduction initiative is a step further toward this ends as the business is now verballing sharing and showing their efforts with guests. Additionally, the green ambassador initiative allows businesses to model their efforts for their peers.

Another theory, linked to modelling, present in each initiative is the forming of norms as Goldstein, *et al.* (2008) promote in their research. For example, normal behaviour can be formed through removal of barriers by implementing physical changes that indicate to the guest that the behaviour is what others do within that accommodation. Highlighting efforts during an initial welcome introduction allow managers to vocally express that water efficiency is a normal behaviour within the site of practice and act as an invitation to join the norm. And a green ambassador program may, over time, create an industry wide impression that water efficiency is normal business practice.

The last theory reviewed in this research that is common among these three initiatives is social capital theory, as described by Coleman (1988). In Stage One and Two of the methods, managers stated that social capital was a major driver for implementing changes to their operations. Wider stakeholders such as government, Waterwise, CoAST network and water companies may find greater success by highlighting the peer benefits (social capital) of removing barriers to behaviours, highlighting efforts in the initial welcome and participating in green ambassador programmes. It is therefore recommended that the behavioural theories of modelling, norms and social capital be considered in the creation and application of future initiatives to promote water efficiency within the tourism accommodation industry.

Results also have wide implications for the nature of changing tourist water behaviour. Segmentation of guests showed three distinct water user types as the 'most conscientious,' 'overt users' and 'disengaged.' Overall, results indicate it may be hard to target each group as the 'disengaged' may not be willing to exchange for changing their behaviour. However, removing barriers to behaviour and adding incentives may be best suited for reaching

every segment, though these initiatives have a deeper implication for the nature of the exchange. In removing barriers to behaviour, the guest is not actively involved in the decision to use less water. While it is probable that this is why this initiative was rated highly, it may also be pragmatic. This initiative places all of the responsibility onto the manager and allows the guests to avoid such accountability. As identified in Coles, *et al.* (2016) removing guest accountability delays the issue of hedonistic behaviour and at worst continues to signal to the guest that negative behaviour is acceptable.

Incentives are more active in their efforts to engage guests, however they too may be viewed as negative signalling to guests. As identified by the motivation crowding theory (Frey and Jegen, 2001), it may signal that guests only need to conserve if it is again in their best interest, instead of the best interest of the environment or society at large. Such negative signalling would appear pragmatic to the larger issue of behavioural flipping. While these initiatives represent viable options for promoting water efficiency in the short term, they may in fact have longer term implications. Further long term research is recommended to better understand these potential issues.

With recommendations already made for which initiatives may be most successful, an important aspect to analysing initiatives is also understanding which stakeholders may severe as potential distribution channels. That is, who is best positioned to promote those initiatives that have had the greatest level of stakeholder support. Since this study focuses on South West England, regional stakeholders will be considered herein.

Each initiative could be promoted by several regional stakeholders. For example, Universities and the UKWIR can better define the empirical evidence

for the effectiveness of these initiatives through further research. Organizations like Waterwise, CoAST Network, South West Water and Green Tourism Business Scheme could promote these initiative through education campaigns targeted at tourism accommodation managers. Managers will be needed to implement such changes and could also serves as distribution channels by sharing ideas across formal or informal networks as examined by Coles and Zschiegner (2011). In summary, all regional stakeholders identified in Chapter One of this thesis could serves as distribution channels for each of the ten initiatives with each stakeholder having a different role in the distribution process.

7.6 Implications for the Field of Social Marketing

The lack of continuity for some initiatives, their implications for promoting water efficiency within the tourism industry and recommendations for distribution channels have been discussed above. However these results also raise several important issues for the field of social marketing that require further discussion. Importantly, as identified in the introduction of this paper, Gardner and Stern (2002); DuNann, Winter and Rogers (2004); Steg and Vlek, (2009) report environmental problems are commonly rooted in 'adverse' human behaviour. Gössling, et al. (2015) recommend the application of social marketing to change water use behaviour within the tourism industry. Further, as identified by Glenane-Antoniadis, *et al.* (2003), Hall (2014) and Andreasen (2006) the epistemological concepts of downstream, midstream and upstream targeting display the far reaching ability of social marketing to affect changes. This research further exemplifies and supports the claims of the effectiveness

and needs for social marketing interventions by identifying the many behaviours, theories and potential initiates within management practices and guest water use in tourism accommodation. Results from stages Two and Three also show the willingness to engage by both managers and guests in such efforts.

While this research represents only one study, several issues are raised by findings presented herein. Specifically, they relate to the contextual nature of social marketing in tourism accommodation, the use of the Delphi method and the prioritization of theoretical versus practical issues.

7.6.1 Contextual Nature of Social Marketing

The application of initiatives appears to be dependent, in part, on the context of the accommodation. Said another way, not all social marketing initiatives were appropriate for each business and instead the size, type and clientele base all appeared to be factors in which initiatives were best suited for individual businesses. Regarding size, relevant previous research (e.g. O'Neill, *et al.*, 2002; Goldstein, *et al.*, 2008; Schultz, *et al.*, 2008) has primarily focused on initiatives created through, and for, larger firms. For example, the international hotel corporations Starwood and ACCOR have begun introducing rewards for participation in towel reuse schemes and incentives have featured prominently in the literature (e.g. Mair and Bergin-Seers, 2009; Shang, *et al.*, 2010). However, are such initiatives appropriate for smaller firms? And what do results presented herein imply for the social marketing process?

In Stage One and Two, managers of SMTEs showed a high level of interest in applying behaviour change initiatives within their accommodation.

This was contingent on initiatives having no negative affect on the guest experience. SMTE managers clearly stated that some initiatives investigated in the literature (e.g. incentives and messaging applying theory from psychology) were not appropriate to their operations. Perhaps surprisingly, responses were mostly consistent, transcending both type of tourism accommodation. Since type of accommodation varied greatly while size remained fixed to SMTEs in this study, this may further suggest SMTEs collectively have unique needs and contexts to those of larger firms as suggested by Font, Garay and Jones (2014). The unique needs of SMTEs within the social marketing context proved vital to the process. For example, the initiative of incentives best exemplified this difference where only mild continuity between the literature and multiple stakeholders was observed. In practice, larger firms such as ACCOR and Starwood are currently providing incentives while, here, guests reported it had the greatest positive affect on their experiences. However, since SMTEs are unable to offer this initiative due to their unique needs, identified in Chapter Five, it suggests that larger firms have a competitive advantage in applying behaviour change initiatives to their smaller competitors. Larger firms have the resources to initiate such efforts while SMTEs may need to be more creative in their approach. Instead SMTEs may need to rely on other means, such as the three initiatives of 'remove barriers to behaviour', 'initial welcome introduction' and 'green ambassadors' to promote water efficiency.

Furthermore, the failure to recognise the unique needs and contexts of SMTEs is a significant omission since they dominate the sector globally and their importance in generating, and reducing, environmental externalities within the tourism industry has been widely acknowledged (Sampaio, Thomas and Font 2012; Coles, Zchiegner and Dinan 2014). Therefore, the key role of

unique SMTE limitations and contexts in this research, highlight a strong need to acknowledge such issues in future social marketing campaigns and research if they are to be successful.

Additionally, as previously reviewed, size, type and clientele all factored into the nature of the social marketing process in this research. As such, industry wide social marketing campaigns may need to be designed for accommodations with similar business models or, if possible, even tailored specifically for a given business to be most effective. It would seem appropriate to consult with managers to best understand these contextual components and tailor initiatives appropriately, as they will be most familiar with the nuances of their business. Diversity of business types, sizes and clientele pose a difficult hurdle to practitioners creating and distributing campaigns throughout the industry. Perhaps the most prudent distribution strategy would be to offer several options and allow businesses to choose which work best for their needs.

7.6.2 The Delphi Method

Another issue needing further investigation is the use of the Delphi method in evaluating and prioritizing social marketing campaign outcomes. While the Delphi method has been used previously in the social marketing literature (see Ling, *et al.,* 1992; Griffiths, *et al.,* 2009; Johnson, *et al.,* 2009; Aschemann-Witzel, *et al.,* 2012), it had not been applied to the purposes used here. Returning to Adler and Ziglio's (1996) three questions and the points from Stitt-Gohdes and Crews (2004) reviewed previously, within the context of this research, the Delphi method was found to lend itself well to the field of social

marketing. That is, the Delphi method displayed advantages over other potential efforts to evaluate outcomes (e.g. interviews, surveys, co-creation). For example, the Delphi method represented a lower cost alternative that avoided several practical barriers which existed for other evaluation tools. Specifically, surveying was conducted remotely over three weeks and did not incur any costs. The project briefly considered co-creation as a final stage to evaluate and prioritize initiatives with both tourism accommodation guests and managers together in the same geographical location. However, getting these two groups together proved logistically and financially restrictive as tourist did not want to spend their holiday in meetings and managers needed to be compensated for missing key work hours.

The use of the Delphi method also meant surveying incorporated a diverse audience of stakeholders. The 21 participants assumed many professional roles, roughly they can be categorized as academics, consultants, governmental workers, non-profit organization leaders, tourism accommodation managers and experts at South West Water. As social marketing is inherently multidisciplinary (Hall 2016) it would seem the Delphi method was complimentary in this example. Furthermore, and unexpectedly, feedback from participants indicated the incentives inherently built into the Delphi method may have increased the diversity and retention of panel members. Response rates to requests to participate in this research (100%) and retention rates between rounds were high (91%). Specifically, some panel members stated they wanted to complete each round to see results from previous surveys while others reported the novelty of the method represented a learning opportunity and thus increased their desire to participate.

Finally, due to the autonomy of the evaluating panel, it may have allowed for a clearer and less biased outcome. For example, Gupta and Clarke (1996) identify the Delphi avoids the 'halo effect,' where members are influenced by other participants with 'higher status.' As previously explored in the literature review of this paper, social marketing can work with behaviours that are emotionally difficult. It would therefore appear that the Delphi method could be applied to circumvent peer pressure or ensure autonomy by respondents in campaigns focusing on difficult issues (e.g. sexual assault. drug addiction, disease prevention, etc.). In this research, the benefits of autonomy were not clearly stated by panel members nor overly apparent. This could be due to the relatively 'safe' topic, prompting water efficiency, of the campaign. However, it is possible that the benefits of autonomy may have been realized through more subtle means.

7.6.3 Theory versus Practice

Findings in the Delphi also have theoretical implication for the field of social marketing. The panel showed a clear desire to target downstream (guests) behaviour. This was evident through the ranking of downstream (guests) initiatives disproportionately higher then midstream (businesses) initiatives and scoring the factor of changing guest behaviour, higher than any other factor for prioritizing initiatives. While a bias towards targeting downstream is well established in the literature (e.g. Andreasen, 2006; Hall, 2013), research has more recently called for increased upstream attention (French, *et al*., 2010; Hall, 2014; 2015; 2016) claiming it may have greater impact on the overall goal of the campaign. The findings here would support the claims of a bias towards

downstream targeting and prove discouraging to those calling for shifts in thinking. This lack of interest in larger scale changes may also have been observed when the Delphi panel scored 'total amount saved' eighth of the ten factors influencing how they prioritized initiatives. Such a low score would seem counterintuitive considering it is the main goal of each initiative. As a result, within the context of this research, a greater shift to upstream thinking is recommended.

Additionally, findings also prove pragmatic for the recent urgent pleas to follow established theory (Shepard, *et al.*, 2009; Luca and Suggs, 2013) and evaluate the success of social marketing campaigns (Hall, 2014). According to these researcher, following established theory will increase the likelihood of campaign success and evaluation will allow proceeding campaigns to learn from past efforts. However, these two factors were scored lower than downstream targeting, practical issues (e.g. financial costs and feasibility) and midstream targeting (businesses). While panel members commented that they were also important, here when weighed against other concerns they did not prove as vital. Lower priority of these theoretical concerns, compared to practical concerns, could have long term negative impacts on the field of social marketing. For example, neglecting to evaluate the success of campaigns could keep practitioners from learning best practices, or worse, encouraging ineffective or even counterproductive practices that were never exposed as such.

Another contemporary issue highlighted in this research is that of co-creation. This research originally aimed to apply the process of co-creation to realize social marketing initiatives. However, as previously discussed, logistical barriers inhibited its application. Also previously discussed is the 'fuzzy'

definition within the literature of how to define the process of co-creation. Three examples within the social marketing literature could be identified that claim to have applied the process of co-creation (Huhman, 2008; Shaw, *et al.*, 2013; Jones, *et al,* 2014). Instead Shaw, *et al.* (2013) and Jones, *et al,* (2014) relied on hired third parties to accomplish co-creation and Huhman (2008) did not adequately describe their methods. With the vague definition of co-creation it could be argued that the current effort used aspects of the process. For example, the development of ideas between managers during the Stage Two semi-structured interviews could be considered an effort at co-creation. Since managers were presented with previous peer ideas and asked to expand upon them to better define how they could be successful in their operations it could be argued that managers co-created the initial welcome introduction, child focused messages and feedback cards. However, due to the loose definition and lack of solid examples within the literature, this claim would be controversial and there is not asserted. As a result, it would appear that an opportunity to fully explore and describe the process of co-creation within the social marketing process still exists and is needed to further the abilities of researchers to apply this tool in a systematic and well defined manner.

7.7 Chapter Summary

Each of the ten initiatives, created through focus groups and interviews with managers and subsequent guest questionnaires, were explained (research question 3.4). A Delphi consultation was then conducted to examine how experts assess the effectiveness of potential initiatives (research question 4.1). The results show the panel had a strong preference for guest targeted initiatives

(downstream) with ‘remove competing behaviours,’ ‘welcome introduction’ and ‘incentives’ ranking highest for priority. This was reinforced by their scoring of factors used to prioritize the initiatives, where changing guest behaviour received the highest score of all ten factors examined. The panel agreed that six of the ten initiatives would highly impact behaviour and ‘increased academic collaboration,’ ‘green business schemes’ and ‘child focused messages’ each received a greater percentage of agreement than disagreement (yet below 50%) showing additional support for these initiatives. This indicated the panel felt these three initiatives would have less impact then the other six higher scored initiatives. Finally, ‘feedback cards’ received a higher disagreement than agreement that it would have an impact on behaviour. Initiatives were ranked for importance of implementation in the following order: remove competing behaviour; initial welcome; incentives; green ambassador; meaningful units of measurement; feedback cards; low interest loans; green business schemes; child focused messages; and, finally, increased academic collaboration.

Additionally, the panel ranked factors important to prioritizing initiatives. All factors were reported to be important, however some scored higher than others. Again, the panel showed that downstream targeting was of greatest importance. This was followed by practical concerns and then midstream targeting (manager behaviour). Receiving lower scores were more theoretical factors such as previous evidence supporting success of the initiative, overall amount of water saved, ability to measure success and support from other stakeholders had the lowest score.

Subsequently, these initiative were investigated and discussed through examining continuity between the literature review and results from each of the four stages of the methods (research question 4.2). Strong continuity and

promotion of three initiatives (remove barriers to behaviour; initial welcome introduction; green ambassadors) was seen. Additionally, moderate continuity of four initiatives (incentives; meaningful units of measurement; low interest loans; and, green business schemes) and low continuity for three initiatives (feedback cards; child focused messages; and, increased academic collaboration) were also observed. Interestingly, the lowest continuity was seen in academic collaboration where the Delphi panel disagreed with the academic literature and managers in Stage One and Two by ranking the initiative lowest in priority, despite consensus that it would have a high positive impact on behaviour.

Regional stakeholders acting as distribution channels for the initiatives were also discussed (research question 4.3). Specifically, Universities and the UKWIR could distribute research findings on the amount and best practices for measuring water use within the tourism accommodation. Through further research, they could also provide empirical evidence of the impact of each initiative on behaviour. Other stakeholders, such as Waterwise, the CoAST Network, South West Water, and the Green Tourism Scheme could distribute information through educational campaigns aimed at tourism accommodation managers. And managers themselves could distribute information through collaboration with peers in formal or informal networks.

Finally, implications of findings on promoting water efficiency in the tourism industry of South West England and implications for the field of social marketing were discussed (research question 4.4). Specifically, standardization of methods and units to measure water use in the tourism accommodation is paramount. Additionally, social marketing efforts appear to be contextual in nature, needing to be applied with respect to the size, type and clientele of

businesses. Such efforts were generally supported by both managers and guests and the research demonstrated the wide reaching impacts such campaigns could have on reducing water use in the industry. Finally, here the Delphi method demonstrated to be an effective tool, despite some lack of continuity between research stages, for assessing and prioritizing potential campaign outcomes suggesting it may prove to be a strong tool toward this ends in future social marketing campaigns.

The results of the Delphi proved pragmatic for several current appeals in the literature. For example, the Delphi panel prioritized targeting downstream (guests), supporting observations in the literature of this bias, despite claims that upstream targeting may create larger impacts. Additionally, the panel subsequently scored the need to follow established evidence and measure success much lower than other factors despite recent appeals in the literature. As a result is it recommended that the application of social marketing to promote water efficient behaviour in tourism accommodation industry follow the theories (modelling, setting norms and offering social capital) identified as effective in this research.

Chapter Eight- Conclusion

8.1 Introduction

This research aimed to critically appraise the nature and application of social marketing to promote water efficiency within the tourism accommodation industry. To accomplish this, a literature review and four stages of methods have been conducted and their results discussed. This chapter will summarize the main findings of this process. Special attention will be directed toward how each research objective, presented in the introduction, was addressed. As with all research, there were limitations to findings and opportunities for further research. These issues will be examined in detail.

8.2 Summary of Main Findings

Through an extensive review of the literature, it was revealed that research into the water use of tourism industry have used several varied units of analysis. Additionally, a lack of description of the methods used to measure water usage was observed. It is therefore recommended that the units and methods for measuring this usage be standardized to ensure cross comparison between studies and to inform longer term goals in reducing water usage.

In Stage One (focus groups) and Two (interviews), businesses reported many previously identified initiatives in the literature were not viable for their operations due to limited financial, IT and staffing resources. Instead manager's proposed new ideas directed at changing both guest and manager

behaviour. The explanation and examination of the novel initiatives, child focused messages, welcome introduction and feedback cards represented unique contributions to the literature. Additionally, managers identified the greatest barrier to implementing any initiatives was the possibility of negatively affecting the guest experience.

In Stage Three (guest questionnaire), guests reported a significant amount of flip-over in water behaviour between home and away, with participants reporting significantly less effort to save water in tourism accommodation. However, not all behaviours flipped. These results contribute to the literature where past finds on behavioural flipping, in particular for water behaviour, were not in agreement. As a result, guests need to be targeted both in the tourism accommodation and at home. Defining behavioural flipping, concentrating solely on water and not general environmental behaviour, within the tourism accommodation represents a unique contribution.

Five water behaviours in tourism accommodation were used to segment the audience using cluster analysis. Three distinct water user types were identified and can be generalized by the labels: 'most conscientious,' 'overt users' and 'disengaged.' Each embodied an amount of effort to use water efficiently and a receptiveness to participate in tourism accommodation initiatives. If resources are limited, targeting the 'overt users' cluster should have the greatest impact on behaviour and therefore water reduction. Targeting the 'disengaged' cluster would then be recommended.

From the literature review and results from these stages, five initiatives to target guests and five to target managers emerged. In Stage Four (Delphi consultation) a panel of experts in tourism, social marketing and water

evaluated and prioritized these potential social marketing outcomes. This represented an original application of the Delphi method within the social marketing literature.

Initiatives are described in descending order of prioritization by the Delphi panel. The initiative receiving the highest overall ranking was to ‘remove barriers to behaviour.’ It aims to reduce barriers and competing water consumptive behaviours to make saving water easier for guests. For example, of all behaviours measured by guests, they reported the highest occurrence of allowing taps to run until the desired temperature was reached. This was accompanied by comments that poor facilities were a barrier to saving water in the guest questionnaire. Therefore, implementing instant hot water heaters, also known as 'on-demand', systems could reduce the amount of time taps run between waiting for the temperature to change. This is only one examples while other examples could include: removal of baths; only providing one towel per guest for their whole stay unless they specifically request another; low flow appliances such as shower heads, tap aerators and toilets; and, separate cold and hot taps to make changes in temperature quicker.

The second most prioritized initiative was verbally incorporating accommodations’ environmental efforts into their initial welcome to ensure the guest knows they care for the environment. Managers in Stage Two of the methods hoped this would establish an expectation for caring for the environment by modelling the desired behaviour. Guests reported this initiative would have a high positive impact on their experience and managers offered anecdotal evidence that it was effective.

Next the Delphi panel prioritized providing incentives for guests. Some larger businesses such as Starwood and ACCOR hotels have begun providing rewards or donating to charity when guests participate in towel reuses schemes. In this research, guests reported rewards and then donations to charity would have the highest positive effect on their experience of all proposed initiatives. However, due to the size of many tourism accommodations in this study, managers stated they did not have the infrastructure to support such a scheme. A potential solution is a region wide scheme, run by a third party (e.g. company or non-profit), allowing businesses to offer small vouchers (e.g. £5 off) for their next stay or donations to charity if individuals sign a commitment to join the business in saving water and energy during their stay. Research on towel reuse schemes has shown that making public commitments to participating in schemes, significantly increases the likelihood of reuse (Baca-motes, *et al.*, 2013) and it is therefore believed that it would also encourage other forms of water efficiency behaviour (e.g. turning off taps when not in use, reporting leaks, etc.). This would be a public commitment on a third party website during the booking phase, or during, their stay at the accommodation.

The fourth highest prioritized initiative was a green ambassador scheme where a system would be established to aid managers in voluntarily hosting open houses with other tourism accommodation managers, sharing their successes and discussing ideas for managing resource use. While similar peer to peer networks exist in some areas, this effort could increase their exposure and create a means for new connections specific to water. Of the five initiatives targeting manager behaviour, this was the highest ranked for prioritization.

Some managers stated the units used to measure their water use had little meaning to them and proposed making them more meaningful. The Delphi panel next ranked an initiative that reported water usage in financial terms (£), smaller units (litters of water) or something more relatable in the accommodation water bill. It is hoped that an alternative unit of measurement would encourage more stringent water management among businesses.

The Delphi panel ranked providing guests with environmental feedback cards sixth among initiatives. Here guests would create solutions to improve the accommodation's environmental efforts through completing cards provided within their room. This idea has been championed by Gössling, *et al.* (2015) and in Stage Three of this research, guests reported it would have a high positive impact on their experience.

Initial investment costs were identified as a major limitation to implementing water efficient technologies and potential initiatives. The panel next prioritized an initiative that would identify small loans at low interest rates for technologies with short payback periods (e.g. low flush toilets, washing machines, solar water heaters, etc.). Such loans could be offered by buying clubs which already exist in some counties or by other water related stakeholders (e.g. water companies, DEFRA, etc.).

Many managers participating in this study had earned green tourism certifications. Overwhelmingly, managers reported feeling their certification had not secured them bookings and were uncertain of the value of the certification. One idea presented by a managers was to increase the services provided by certification programs (i.e. Green Tourism Business Scheme and VisitEngland’s star rating) or create a new certification scheme offering

additional services. These services could include access to customer lists; promotions; top tips; inclusion into buyers' clubs and low cost water/energy audits along with the normal certification. The Delphi panel, prioritized this initiative eighth out of the ten investigated here.

The Delphi panel then ranked messaging focused toward children. In previous stages, managers showed a high interest in messaging to guests, asking them to help save water. Managers reviewed messages examined in the literature and reported they were too 'boring' and rigid. Their idea was to target children with messages and in turn potentially have kids affect the behaviour of their parents. These messages would aim to be 'fun' and may be distributed as stickers to place in tourism accommodation bathrooms. However, guests reported a relatively low positive impact on their experience from messaging and out of five messages, an example of a child focused message was ranked last for its impact on changing their behaviour.

Finally, the panel ranked increasing academic collaboration lowest of the ten initiatives. In Stage Two of this research, manager reported no previous exposure to academic research on water efficiency. However, as interest was very high, this was due primarily to a lack of availability. This initiative would call for both an increase in academic research directly with water related stakeholders and the dissemination of findings through 'open sources,' presented in 'non-academic speech', to increase impact of such work.

In reporting how initiatives were ranked, the Delphi panel showed a strong desire to focus on changing downstream (guest) behaviour. This was followed by practical concerns such as financial costs and feasibility of being initiated. Midstream targeting (businesses), the use of established evidence,

amount of water saved and ability to measure results were then prioritized. Finally, upstream concerns (i.e other stakeholder support) were scored lowest.

A moderate level of continuity between the literature and each stage of the methods was observed with only three initiatives receiving consistent support; four with varying levels and three with little. Those initiatives receiving both high and consistent support included the removal or barriers to behaviour, the initial welcome introduction and the green ambassadors' scheme. As such, it was recommended that practitioners wanting to promote water efficiency in tourism purse these efforts moving forward. Findings also had implications for the field of social marketing.

One such finding was related to the nature of applying social marketing in the tourism accommodation industry. That is, the context (size, type and clientele) of the accommodation appears vital to the success and prioritization of the initiative. The need to craft campaigns for particular contexts may represent a hurdle for distributing larger scale initiatives throughout the industry. For larger distribution efforts, offering several options to businesses and allowing them to select those most appropriate to their context may be most effective. Additionally, in particular, size of the accommodation appeared to be an important difference in selecting an appropriate initiatives. As reviewed, few studies of social marketing in tourism could be identified that had specifically focused on SMTEs. Here, SMTEs stated many social marketing initiatives developed through and with larger firms were not viable within their operations due to limitations in staffing, finances and IT. Therefore limitations identified by SMTEs may represent competitive advantages for larger firms to implement social marketing initiatives. Additionally, the failure to recognise the unique needs and contexts of SMTEs in past efforts is a significant omission since they

dominate the sector globally and their importance in generating (and reducing) environmental externalities from tourism has been widely acknowledged (Sampaio, Thomas and Font 2012; Coles, Zchiegner and Dinan 2014). Therefore, social marketing research in the field of tourism needs to consider the unique needs and contexts of SMTEs if it is to be used in creating more sustainable tourism systems.

Another theoretical contribution from this research was the unique application of the Delphi method which displayed advantages over other potential efforts to evaluate project outcomes. For example, the Delphi method represented a lower cost alternative that avoided several practical barriers which existed for other evaluation tools; incorporated a diverse audience of evaluators, supporting the multidisciplinary aspects of social marketing; and, due to the autonomy of the evaluating panel, potentially allowed for a clearer and less biased consensus of outcomes which can plague other methods (Gupta and Clarke, 1996). As such, findings also suggest the Delphi method could be an effective tool within social marketing campaigns, where special attention is needed to address the many documented limitations (e.g. sample size, selecting panel members and establishing how to determine consensus) (Diamond, *et al.*, 2014).

Furthermore, while this research represents only one example, results support observations by Andreasen (2006) and Hall (2013) that downstream marketing receives the highest degree of attention in practical application despite calls for more upstream focus (French, *et al*., 2010; Hall, 2014; 2015; 2016). Findings also proved pragmatic for the recent urgent appeals to follow and report established theory (Shepard, *et al.*, 2009; Luca and Suggs, 2013) and evaluate campaign success (Hall, 2014; French, *et al*., 2010) as these

factors ranked low for influencing the prioritization of initiatives. Therefore the nature and application of social marketing to promote water efficiency in tourism accommodation appears complex, specific to the context (e.g. type, clientele and to a greater extent size) of the accommodation and perhaps divergent from the recommendations of best practices. As such, it is recommended here to follow those previous calls to increase upstream efforts and follow established theory. Shifting focus upstream will increase the likelihood of large scale changes in saving water in the tourism accommodation industry. Similarly, following established theory will increase the likelihood of successful campaigns. Findings from this research recommend a focus on the theories of modelling, norms and social capital theory.

8.3 Meeting the Thesis Objectives

8.3.1 Objective One

The first objective of this research was to investigate how tourism accommodation businesses manage water. Stage One and, to a lesser extent, Stage Two were designed to support this objective. Through focus groups and semi-structured interviews, managers reported several key management practices. First, water was not as actively managed as electricity, reportedly due to its lower cost and limited focus by other avenues (media, environmental non-profits, government) in relation to electricity. While managers stated a lower priority for managing water, they also acknowledged water was vital to the success of their business (cooking, cleaning, guest comfort, etc.). Managers were interested in discovering new ideas for reducing water usage as long as they did not impact the guest experience and were low cost. They identified

that efforts to save water were mostly driven by a desire to 'do the right thing' and gain social capital among their peers. This is counter to results from Coles and Zschiegner (2011); O'Neill, *et al.* (2002) and Carmona-Moreno, Cespedes-Lorente and Burgos-Jimenez (2004) whom report larger firms are most motivated by profit. However, the participants in this stage all managed SMTEs. In this context findings are similar to those reported in the SMTE literature (Font, Garay and Jones, 2014) that owners and managers of SMTEs are not solely driven to participate in corporate social responsibility initiatives by profits.

When presented with initiatives previously investigated in the academic literature, managers in this study reported they were not viable within their operations. Specifically, managers cited a lack of financial resources, staff and IT to manage money-off vouchers and donations to charity. This is perhaps not surprising as Ateljevic and Doorne (2000) and Dewhurst and Thomas (2003) also find smaller firms have these disadvantages compared to larger firms.

Managers in this research also questioned the tone of messages previously examined in the literature (e.g. Goldstein, *et al.*, 2008; Schultz, *et al.*, 2008) stating they sounded too rigid and impersonal. Instead they offered alternatives such as feedback cards, integrating their efforts into the initial welcome introductions and child focused messages. Ideas to change managers' practices such as green ambassador schemes, improved certification schemes, and receiving more meaningful units of measurement in their bills were also explained.

8.3.2 Objective Two

This objective was concerned with examining behaviour among water users, investigating water behaviour in the home and when in tourism accommodation. Stage Three of the methods, the guest questionnaire, was applied to this end. First, an investigation into water usage in the home revealed similar findings to those in the literature. Specifically, results showed homes with a water meter, home owners and older individuals, reported higher efforts to use water efficiently. These characteristics have also reported in work from CCWater (2006), DEFRA (2009), UKWIR (2014) and South West Water (2014).

In tourism accommodation, no variation in sample characteristics showed significant differences for reported efforts. However, those staying in tourism accommodation more often for business/work reported higher efforts. While the reason for this difference is not evident from the data, it could perhaps be due to business travellers treating the tourism accommodation as a 'home away from home' due to their familiarity with the experience. While Shang, *et al.* (2010) investigated only towel reuse schemes and not more general water behaviours, their findings are in contrast to those here. Instead, they found business travellers had no significant difference in intention to participate in towel reuse schemes to those traveling less often for business.

Attitudinal data related to water issues in the tourism accommodation were also examined. The majority of individuals reported a willingness to participate in programmes and acknowledged their responsibility for water use. This supports claims by Gössling, *et al.* (2015) that 'evidence suggests that a large majority of guests are open to a moderate degree of involvement' (p.101) in water behaviour at tourism accommodation. However, interestingly guests

reported a large amount of blame of other guests as the main water wasters. While similar attitudes had not been previously explored in tourism accommodation, this supports observation by Pearce, *et al.* (2012) of a blame culture in water issues in the UK. Similarly, here, high levels of scepticism were reported for the efficacy of towel reuse schemes. While this question had not previously been explored, it does support claims by Shang, *et al.* (2010) and Yi, *et al.* (2016) that guests have high levels of scepticism for some environmental efforts in tourism accommodation.

Results showed that individuals reported significantly higher effort to save water at home than in tourism accommodation for most behaviours. Therefore, targeting guests in the tourism accommodation is needed. This supported findings by Dolnicar and Grün (2008) and Barr, *et al.* (2010) that low levels of spill-over behaviour from home to away occur. It also may support findings by Miao and Wei (2013) that motivations on holiday are driven by different motivations compared to those in the home. However, some behaviours did not 'flip-over' which may explain why Miller, *et al.* (2014) found water behaviour was similar from home to holiday. Said another way, since this research was able to investigate water efficiency behaviour in greater detail (i.e. more behaviours related to water) then previous studies, previous findings may both be correct depending on the specific water behaviours tested. This more complex view of water behaviour highlights a need to target both the home and holiday experience. Targeting home behaviours may ensure those behaviours that do spill-over become ingrained habits when on holiday.

The differences in barriers and drivers to behaviour described by guests and managers, highly suggest that social marketing efforts need to be different for these groups. Specific to guests, through cluster analysis, three clusters

were found that embodied very different behaviours. Similar to work by the UKWIR (2014), investigating home water use, clusters varied in their efforts to use water efficiently and varied in their attitudes toward water. However, the UKWIR (2014) study found five distinct segments of users in the home while here three were explained. This may be due to guests having less capability to practice water efficiency within the tourism accommodation compared to at home, though this question is outside of the scope of the current research.

8.3.3 Objective Three

The third objective was to describe potential efforts to change water behaviour in tourism accommodation. Guest segments, discovered in Stage Three of the methods, responded differently to initiatives proposed in the literature and/or the managers in Stage Two. In particular, guests reported the highest positive impact from being offered money-off vouchers. This supports findings by Miao and Wei (2013) that hedonistic motivations drive behaviour on holiday. Said another way, guests wanted to be compensated for changing their behaviour, clearly looking for how they could gain from the exchange. This was followed by money to charity, feedback cards and the initial welcome introduction (depending on the segment).

While messaging as an initiative scored low for having a positive impact on the guest experience, guests were asked if five different messages would encourage them to save water. The most generic message received the highest agreement while the child focused message received the lowest. This was in strong contrast to the literature where previous studies (Goldstein, *et al.*, 2008; Schultz, *et al.*, 2008; Blose, *et al.*, 2015; Reese, *et al.*, 2014) have found

the generic message to be less effective than others. Each segment reported messaging placed in the bathroom would most impact their behaviour, though each segment showed significantly different receptiveness to other means. For example, a significant difference between clusters was observed for receptiveness to verbal requests with 'overt users' scoring highest.

Finally, results from Stage One, Two and Three were synthesized and the five key points of a social marketing campaign were applied. Ten potential initiatives emerged with five targeting managers and five targeting guests. Removing barriers to behaviour, incentives, feedback cards, incorporating environmental efforts into the initial welcome introduction and child focused messages were designed to target guests. While low interest loans; green business certification schemes with added incentives; green ambassador programs; more meaningful units of measurement; and, increased academic collaboration were all designed to target managers.

8.3.4 Objective Four

The final objective of this research was to assess the effectiveness of potential social marketing initiatives to encourage water reduction in the tourism accommodation industry. To accomplish this objective a Delphi consultation with experts in tourism, social marketing and water was conducted. The panel was asked to evaluate the effectiveness of each initiative to change behaviour; rank potential initiatives in order of priority for implementation; and, to measure the factors they used to prioritize implementation. Consensus was found on most issues with the panel prioritizing removing barriers to behaviour, the initial welcome introduction, incentives, green ambassadors and meaningful units of

measurement as the top five initiatives. The process yielded several practical and theoretical contributions. Specifically, a high level of continuity was observed between evaluation by the Delphi, the literature and manager and guests responses in previous stages of the methods for the initiatives remove barriers to behaviour, initial welcome introduction and green ambassadors.

The research yielded several theoretical contributions such as the lack of SMTEs participation in past efforts and need to consider their unique context in future academic research. It also highlighted the need to consider the context of the business (e.g. size, type, clientele) when applying social marking within tourism accommodation. Additionally, project results suggest the Delphi method may be a viable method for prioritizing and assessing social marketing initiatives. Finally, results proved pragmatic for several contemporary issues receiving attention in the social marketing literature. Specifically, they support observations by Andreasen (2006) and Hall (2013) that downstream marketing receives the highest degree of attention in practical application despite calls for more upstream focus (French, *et al*., 2010). Findings also prove pragmatic for the recent urgent appeals to follow and report established theory (Shepard, *et al.*, 2009; Luca and Suggs, 2013) and evaluate campaign success (Hall, 2014; French, *et al*., 2010) as these factors received relatively low scores for their importance in prioritizing initiatives. This is an important discovery as the lack of focus on theory and evaluation could have long term negative impacts on the field of social marketing moving forward.

8.4 Limitations of the Current Research

There are several limitations to this research. Namely, while the findings offer strong conceptual and practical recommendations for the use of social marketing to change guest behaviour, discrepancies between reported behaviour and those actually occurring are always possible in any study of this nature. This phenomenon has been referred to as the action-behaviour gap (Kollmuss and Agyeman, 2002). Moreover, whilst managers offered anecdotal evidence that, for example, highlighting environmental efforts during the initial welcome introduction changed guest behaviour, no data exists to evidence this claim. Therefore, while this study focused on how initiatives would impact the guest experience to ensure they addressed the greatest limitation to their implementation, further research, preferably experimental in design, is needed to determine impacts from these initiatives specifically on changing actual behaviour.

Another potential limitation is in the discussion of the methods used in this research. Viewed one way, the methods could be considered a form of circular logic. Since, findings of each stage were used to inform the next and continuity was a key aspect to the evaluation process, it could be argued that it was a foregone conclusion that each stage would be in agreement. However, since best practices were upheld within each stage of the data collection sections, such a mistake would be unlikely. Despite Hall (2015) identifying in the social marketing tourism literature that all researchers have a bias and that bias is present in all findings, since best practices were followed, such a concern was minimized. None-the-less, it is important to acknowledge that the

linear and compounding nature of the methods stages could lead to a greater degree of such bias.

In the Stage Three guest questionnaires two limitations existed. Selecting the amount of clusters in cluster analysis always applies a level of subjectivity. While research was conducted following best practices, the decision to analyse three clusters, instead of four, is an acknowledged limitation. Additionally, collecting qualitative data through interviews from individuals within each of these three clusters was desired to support quantitative data. However, the third party (Cint) would not allow its users to be contacted for further research and therefore this supporting data was not able to be collected. As such, open ended questions were used in the questionnaire which yielded, sometimes, short and incomplete types of responses.

Specific to the Delphi consultation, no guests were explicitly involved, potentially excluding an important stakeholder. While all panel members had stayed overnight in a tourism accommodation at some point, they represented other stakeholders in the process. Thus a limitation is that no 'expert' guests were present in the Delphi to represent this group. An expert solely representing this group could have ensured that all stakeholders were present for the final stage and added greater value to the consensus. Other pre-existing limitations to the Delphi method (e.g. selection of the sample; sample size; defining consensus; etc.) were highlighted in previous sections and are again acknowledged here.

Finally, as both guests and managers were targeted for initiatives, a more directed social marketing approach with managers may have added greater value to the research. That is, guests were targeted by data driven

segmentation while managers were segmented through *a priori* means. Specifically, managers were segmented through stratified convenience while a more sophisticated data driven approach was performed with guests. This approach was taken due to the scale of the project which did not allow for a questionnaire with managers due to time and financial restraints. However, had time and resources permitted, data driven methods also applied for segmenting managers, as recommended by Dolnicar (2004), would have been preferred.

8.5 Implications for Further Research

First, as identified in Chapter One of this thesis, there is a strong need for consensus on how to measure water usage within tourism accommodation and how to compare across businesses. Without a set procedure for making and reporting these measurements, it is difficult to set goals and measure successes. In this way, this fundamental issue could be seen as the most important first step in future research as it is the foundation for measuring both need and impact.

Also identified in previous sections, further research on the impact of initiatives, identified within this research, on behaviour is needed to verify findings. Due to the potential gap between reported behaviour and actual behaviour, experimental research would best serve this need. It would seem prudent to start this experimental research with the three initiatives (i.e. removing barriers to behaviour, initial welcome introduction and green ambassadors) receiving the most support in this study. Such verification could also occur in different geographic locations to widen the understanding of potential solution outside of South West England.

Finally, future research could concentrate on shifting attention further upstream. For example, an investigation into how manager segments, clustered through data driven means, respond to varying initiatives would aid practitioners in better targeting and communicating with managers through more directed efforts. Additionally, there is also an opportunity to better understand how to most effectively target upstream (government, water companies, media, politicians, etc.) regarding the promotion of water efficiency in the tourism industry. As identified by some authors (e.g. Andresean, 2010; Hall, 2015) such efforts could create even greater impacts.

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Appendices

Appendix 1: Segmentation of UK Home Water Users.

Segment Name	% of Survey Sample	% with a Meter	Key Demographics	Important Characteristics	Environmental Attitudes	Usage Behaviour	Key Barriers
Disengaged	28	23 (lowest)	Spread; 18-24 year olds; lowest social status	Less likely to be water bill payer; renters; single occupants; careful with money; least likely to pay for quality	Least likely to recycle; least likely to pay for pro-environmental goods; low environmental attitude	Low amount of water saving devices; least likely to under take and change behaviour; never thought about amount of water usage	Low home ownership; not bill payers; lack of interest; lack of finances
Theory Not Practice	15	28	Spread; 35-44 years old and low social status	Most likely to have 4+ occupants in home; most likely to own home; families; careful with money; neat and ordered	Strongly believe in climate change and high environmental attitude	Most likely to think it is difficult to reduce water usage; never though about amount of water usage; unlikely to change behaviour	Money; time and effort; lifestyle; large households (perceived to be difficult to reduce use)
Contemporary Lifestyles	22	28	Spread but likely to be male and under 45 years old and high social status	Most likely to buy pro-environmental products; will to pay for quality; larger households	Low environmental attitude and moderate view on climate change	Have thought about water usage; relatively open to easy implementation; likely to use water in the garden; most likely to disagree it is difficult to reduce water usage	Time; poor/busy families; environment not a key priority
Settled Residents	15	33	Spread but likely to be 45 plus year old female bill payer	Couples; home owners; have large or medium gardens; highest amount of average occupants	Strong belief in climate change; high environmental attitude and saving water is important	Unlikely to believe reducing water use is difficult; Low tech owners of water devices; use water in garden	Later stage of life may be less likely to change behaviour or lifestyle
Conscious Consumers	20	35 (highest)	Slightly more likely to be female 45-65; single occupiers; high social status	Likely to own a home; likely not to like seeing things go to waste	Most likely to recycle; moderate views on environment; saving water is important	Use less water if bills increased; most likely to have thought about their usage; most likely to have already engaged in water efficient behaviour	None, already engaged

Source: UKWIR (2014, p. 20).

Appendix 2: Manager Focus Group Themes

Participation Experience

1. What was your experience of participating in such a review / project?

Impact on Business

2. How has your business changed as a result of your participating in this work?

Wider Issues: Energy, Water and Business

3. Are you seeing any change in your energy and water use (consumption) and costs?
4. How do energy and water feature in your business model?
5. Do your have a strategy for managing energy and water?
6. How do you approach your guests about their potential to help save energy and water?
7. What solutions can you think of that would help businesses like yours reduce its energy and water use and costs?
8. Finally, to what extent do you think of your tourism business as a service provider or as a resource user or both?

Appendix 3: Manager Semi-Structured Interview Themes/Questions.

My name's Scott Borden and I am a PhD student in the Business School at the University of Exeter. I'm investigating water use in tourism accommodation businesses, and I would like to ask you some questions about water use in your business. This shouldn't take very long. Unless you would prefer not, I'd like to record this interview and transcribe it later. Your views will be reported anonymously and nobody will be able to identify you from anything you say. If you'd like to withdraw from my research, you may do so at any time during the interview.

1. **First of all can you tell me a little more about your business, please?**

    - When opened, bedspaces, employees (no. / FTE), occupancy, pricing, market/s, how long have you owned it?
    - Facilities provided to guests? Star-rating? Full-service? F&B? Laundry on-site?
    - Do you have an environmental manager (who does the monitoring)? Green certifications?

2. **How important is water to your business? Why?**

    - How much water do you use? Is that a lot, do you think?
    - Would you like to save water? How important is water saving to business?
    - Water security?

3. **Do you have strategies for managing water use in your business?**

    - In all areas of the business? Some prioritized more than others? Laundry? Gardens? F&B?
    - Managing costs and/or consumption?

4. **How does water feature in your business model?**

    - What proportion of your costs are water?
    - Do you monitor costs / consumption? If so, how often? What happens to that data?
    - Do you consider the costs of energy used to heat water? Why or why not?

5. Are there any barriers to using less water in your business?

- Technology? Staff? Guests?

6. What would encourage your business to use less water?

- What would encourage the staff / other managers to use less water?

7. Specifically, how do you think you could get guests to use less water?

8. Do you think that any of these ideas might work for your business? Why?

A. Ideas generated from previous manager interviews.
B. Incentives (specifically reinvested revenue): For example, a £5 pound vouchers may be offered in exchange for not having your linens, towels or room cleaned which they can use at the café, bar or other internal concession.
C. Regulation: All business of equal size are made to have equal building regulations for water savings.
D. Donations: For example, for every 5 guests that reuse their towels a tree is planted or for each participation £2.50 is donated to UNICEF.
E. Technologies: Water saving devices
F. Messages: Loss aversion; prevention; facts; social norms; etc.

9. If you wanted to encourage guests to reduce water use, where would this be (in the business)?

- Where would you place messages? i.e. where would this take place? Rooms, bathrooms, toilets, lobby, check-in, guest services?

10. Whose responsibility should it be to encourage greater water efficiency in tourism accommodation?

- Y/ours, other business owners, other managers within (our) business, South West Water, the media, not-for-profit water organizations, any others?
- In general – in particular, within this business?

Appendix 4: Guest Questionnaire

1. Have you stayed overnight in tourism accommodation (hotel, B&B, self-catering, tent pitch, caravan park, etc.) in the last 6 months in England or Wales? *

- Yes
- No

2. During your MOST recent trip in England or Wales, what type of tourism accommodation did you stay in? *

- Hotel
- B&B
- Self-catering
- Campsite/ Caravan park
- Other (please specify):

3. Which describe your motivation for traveling while staying in this accommodation?

Please select any that apply: *

- To visit friends and relatives
- Holiday
- Business or for work
- Other (please specify):

4. Please indicate the level to which any accommodation service(s) were considered when making your last booking in England or Wales: *

	Very unimportant	Unimportant	Neither important nor unimportant	Important	Very important
Swimming pool					
En-suite bathroom					
Spa					
Separate shower and bath					
Fresh linen daily					
Fresh towel(s) daily					
Luxury showers					

5. Overall, please rate your effort to save water during your last stay in tourism accommodation in England or Wales: *

- 0 (I made no effort to save water)
- 1
- 2
- 3 (I made some effort to save water)
- 4
- 5
- 6 (I made every effort to save water)

6. Generally, in tourism accommodation: *

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I apply what I have learned in tourism accommodation about water-saving, when back at home	☐	☐	☐	☐	☐
Luxury means being able to use as much water as I want	☐	☐	☐	☐	☐
I use less water than other guests	☐	☐	☐	☐	☐
I've paid for the accommodation so I'll use as much water as I like	☐	☐	☐	☐	☐
Participating in saving water positively affects my experience	☐	☐	☐	☐	☐
It's the accommodation providers' responsibility to save water, not the guests'	☐	☐	☐	☐	☐
I am willing to pay more for a water-efficient tourism accommodation	☐	☐	☐	☐	☐
I believe that if I try to reuse my towel(s) more than once they are changed anyway	☐	☐	☐	☐	☐

7. Generally, in tourism accommodation: *

	Never	Rarely	Sometimes	Frequently	Always
I control the water when taking a shower to minimize my use	☐	☐	☐	☐	☐
I have longer showers when a shorter one would do	☐	☐	☐	☐	☐
I shower instead of taking baths specifically to save water	☐	☐	☐	☐	☐
I let water run until it is at the right temperature	☐	☐	☐	☐	☐
If offered, I participate in towel reuse schemes, not to have my towels washed each day	☐	☐	☐	☐	☐
I take multiple showers/baths in a day	☐	☐	☐	☐	☐
I prefer to stay in accommodation that is certified as a green business	☐	☐	☐	☐	☐
I let the tap run when brushing teeth	☐	☐	☐	☐	☐

8. Is there anything preventing you from saving water in tourism accommodation? If so, what? *

9. What would encourage you to participate more in saving water in tourism accommodation? *

10. How would each water saving initiative affect your experience? *

	Very negatively	Negatively	Neither positively nor negatively	Positively	Very positively
A light turning on in the shower when you have exceeded 5 minutes	☐	☐	☐	☐	☐
A message asking you to help use less water	☐	☐	☐	☐	☐
A donation to charity by the accommodation if the towels or linens are not changed every day	☐	☐	☐	☐	☐
Having the environmental efforts of the accommodation highlighted during your initial welcome introduction	☐	☐	☐	☐	☐
A feedback card asking you for suggestions on how to improve the accommodation's environmental efforts	☐	☐	☐	☐	☐
A money-off voucher on concessions or your next stay if the towels or linens are not changed every day	☐	☐	☐	☐	☐
Personalized measurement of how much water you used during your stay made available for you to see	☐	☐	☐	☐	☐
Waterless urinals located in the facility	☐	☐	☐	☐	☐

11. To what extent would the following messages encourage you to use less water in tourism accommodation? *

	Very much	Some	Possibly	Not likely	None
Other guests in this accommodation have expressed a desire for us to use less water, please aid us in this endeavour	☐	☐	☐	☐	☐
Please promote our beautiful local environment by using less water	☐	☐	☐	☐	☐
Quack Quack is duck for "please save some water for me"	☐	☐	☐	☐	☐
Amazingly, of the 22 water supply areas in England and Wales, the Environment Agency classifies 12 as 'seriously water stressed'. This assessment is made by comparing current and forecast rainfall per person with current and forecast household water demand per person. Please help us care for the environment by using only the water you need	☐	☐	☐	☐	☐
Heating and transporting water consumes a large amount of electricity, increasing greenhouse gases. For example, according to the Environment Agency, roughly 25% of electricity used in the home is for heating water. Please help us care for the environment by using only the water you need	☐	☐	☐	☐	☐

Would you like to suggest a message that would appeal to you and others?

12. Where would a message promoting water efficiency have most impact on you? Please select any that apply: *

- [ ] Bathroom
- [ ] Welcome pack
- [ ] Verbally during the introduction
- [ ] Accommodation's website
- [ ] Personalized email prior to arrival
- [ ] On my phone
- [ ] No message would impact me

13. What is the name of your water company at home? *

- [ ] Anglian Water
- [ ] Bristol Water
- [ ] Cambirdge Water
- [ ] Cholderton and District Water
- [ ] Dee Valley Water
- [ ] Dwr Cymru Cyfyngedig
- [ ] Essex and Suffolk Water
- [ ] Northumbrian Water
- [ ] Portsmouth Water
- [ ] Bournemouth Water Ltd
- [ ] Severn Trent Water
- [ ] South East Water
- [ ] South Staffordshire Water
- [ ] South West Water

- [ ] Southern Water
- [ ] Sutton and East Surrey Water
- [ ] Thames Water
- [ ] United Utilities Water
- [ ] Veolia Water
- [ ] Veolia Water East
- [ ] Veolia Water Southeast
- [ ] Wessex Water
- [ ] Yorshire Water
- [ ] Don't know
- [ ] Don't have one

14. At home, our property is: *

- [ ] On a water meter
- [ ] Unmetered
- [ ] Has its own water supply

15. When at home: *

	Never	Rarely	Sometimes	Frequently	Always
I control the water when taking a shower to minimize my use	☐	☐	☐	☐	☐
I have a long shower when a shorter one would do	☐	☐	☐	☐	☐
I shower instead of take baths specifically to save water	☐	☐	☐	☐	☐
I let the water run until it is at the right temperature	☐	☐	☐	☐	☐
I buy water efficient appliances	☐	☐	☐	☐	☐

	Never	Rarely	Sometimes	Frequently	Always
I take multiple baths/showers in a day	☐	☐	☐	☐	☐
I turn off the tap when brushing my teeth	☐	☐	☐	☐	☐
I fill the kettle over the amount needed for my hot drinks	☐	☐	☐	☐	☐
I use rainwater when possible (e.g. to water the garden, to wash my car, etc.)	☐	☐	☐	☐	☐
I run the washing machine when it is not full	☐	☐	☐	☐	☐
I have water leaks fixed as quickly as possible	☐	☐	☐	☐	☐

16. Overall, please indicate your effort to save water at home: *

- ☐ 0 (I make no effort to save water)
- ☐ 1
- ☐ 2
- ☐ 3 (I make some effort to save water)
- ☐ 4
- ☐ 5
- ☐ 6 (I make every effort to save water)

17. Overall, please compare your effort to save water at home to when in tourism accommodation: *

- [ ] 0 (Less effort to save water at home than in accommodation)
- [ ] 1
- [ ] 2
- [ ] 3 (The same amount of effort)
- [ ] 4
- [ ] 5
- [ ] 6 (More effort to save water at home than in accommodation)

Comments:

18. In the past year, how many nights have you stayed in a tourism accommodation (anywhere in the world) for business/work and holiday? Please tick one option for business AND one option for holiday. *

	0-5	5-10	10-15	15-20	Over 20
Business/work	☐	☐	☐	☐	☐
Holiday	☐	☐	☐	☐	☐

19. Your gender? *

- [ ] Male
- [ ] Female

20. Your age? *

- [ ] 16-19
- [ ] 20-24
- [ ] 25-29
- [ ] 30-35
- [ ] 35-44
- [ ] 45-59
- [ ] 60-64
- [ ] 65-74
- [ ] >74

21. Which best describes your occupation? If retired, your occupation at retirement. *

- [ ] Higher managerial, administrative or professional
- [ ] Intermediate managerial, administrative or professional
- [ ] Supervisory or clerical and junior managerial, administrative or professional
- [ ] Skilled manual worker
- [ ] Semi and unskilled manual worker
- [ ] Casual, non-worker or unemployed

22. Please respond to the following statements: *

	Strongly agree	Agree	Unsure	Disagree	Strongly disagree
We are approaching the limits of the number of people the earth can support	☐	☐	☐	☐	☐
Humans have the right to modify the natural environment to meet their needs	☐	☐	☐	☐	☐
When humans interfere with nature it often produces disastrous consequences	☐	☐	☐	☐	☐
Human ingenuity will ensure that we do not make the earth unliveable	☐	☐	☐	☐	☐
Humans are seriously abusing the environment	☐	☐	☐	☐	☐

23. What is your housing situation? *

- ☐ Home owned outright
- ☐ Home owned with a mortgage or loan
- ☐ Shared ownership
- ☐ Let from council (local authority)
- ☐ Let from private landlord or letting agency
- ☐ Other (including living rent free)

24. What is your highest educational qualification? *

- [ ] GCSE/NVQ
- [ ] A/AS Level/GNVQ
- [ ] Bachelor's/Degree
- [ ] Master's
- [ ] Doctorate
- [ ] Other (please specify):

25. How many adults and children (under 18) live in your household? *

Adults *

Children *

26. What is the total income of your household each year? *

- [ ] <£9,999
- [ ] £10k-£19,999
- [ ] £20k-£29,999
- [ ] £30k-£39,999
- [ ] £40k-£49,999
- [ ] £50k-£74,999
- [ ] £75k-£100k
- [ ] £100k+
- [ ] Prefer not to say

Appendix 5: Selection Process for Questions in the Guest Questionnaire.

Question Number	Question	Corresponding Objective	Corresponding Research Question	Supporting Literature	Reason for Question
1	Have you stayed overnight in tourism accommodation (hotel, hostel, B&B, cottage, caravan park, etc.) in the last 6 months in the England or Wales?	2	2.1	N/A	Screening Question
2	During your MOST recent trip in England or Wales, what type of tourism accommodation did you stay in?	2	2.1	South West Water, 2014	Independent Variable
3	Which best describes your motivation for travel while staying in this accommodation?	2	2.1	Hall, 2014; Dolnicar & Grün, 2012	Independent Variable
4	Please indicate the level to which any service(s) were considered when making your last booking in England or Wales:	2	2.1	Ham & Han, 2012; Kim & Han, 2010; Lee, *et al.*, 2010	Independent Variable/May affect the social marketing message
5	Overall, please rate your effort to save water in tourism accommodation	2	2.1, 2.2	DEFRA, 2009; UKWIR, 2014; Miller, *et al.*, 2014; Barr, *et al.*, 2010	Compare home/away; understand overall effort on holiday
6	Generally in tourism accommodation:	2, 3	2.1, 2.2, 3.1, 3.2, 3.3	N/A	General questions about water saving
	The quality of my showering experience is more important than saving water	2, 3	2.1, 2.2, 3.1, 3.2, 3.3	Bakhtiar, *et al.*, 2014	Common response by managers to why they do not want to change shower fixtures
	I apply what I have learned in tourism accommodation about water-saving, when back at home	2	2.1, 2.2	Gössling, *et al.*, 2015	No evidence in literature of transference with Gössling, *et al.* (2011) suggesting it could happen
	Luxury means being able to use as much water as I want	2, 3	2.1, 3.1, 3.3	Bakhtiar, *et al.,* 2014	Luxury as a potential barrier
	I use less water then other guests	2	2.1	DEFRA, 2009; UKWIR, 2014; Miller, *et al.*, 2014;	Question at hand

				Barr, *et al.*, 2010	
	I am not willing to pay more for water efficiency	2	2.1	DEFRA, 2009; UKWIR, 2014; Miller, *et al.*, 2014; Barr, *et al.*, 2010	DEFRA, 2009 variable of importance; Potential cluster variable
	I believe that if I try to reuse my towel(s) more then once they are changed anyways	2	2.1	Gössling, *et al.*, 2015	Little reported on this subject only that it could happen but no evidence
	I've paid for accommodation so I'll use as much water as we like	2	2.1	Gössling, *et al.*, 2015	Attitudinal question; Potential cluster variable
	Participating in saving water positively affects my experience	2	2.1	Gössling, *et al.*, 2015; Bakhtiar, *et al.*, 2014	Belief held by many 'green' accommodation managers and GTBS
	It's the accommodation providers' responsibility to save water not the guests'	2	2.1	Miller, *et al.*, 2014; Barr, *et al.*, 2010	Taking a break as a barrier/ follow up on Stage 0 findings
7	Generally, in tourism accommodation:	2	2.1	N/A	Measure behaviours
	I have longer showers when shorter would do	2	2.1	Miao & Wei, 2013	Potential cluster variable
	I take baths instead of showers specifically to save water	2	2.1	Miao & Wei, 2013	Potential cluster variable
	I let the tap run when brushing teeth	2	2.1	Miao & Wei, 2013	Potential cluster variable
	I stay in accommodation that is certified as a green business	2	2.1	Miao & Wei, 2013	Potential cluster variable
	I take multiple showers/baths in a day	2	2.1	Miao & Wei, 2013	Potential cluster variable
	If offered, I participate in towel reuse schemes, not to have my towels washed each day	2	2.1	Goldstein, *et al.*, 2008; Shang, *et al.*, 2010; Coles & Zschiegner 2011; O'Neill & Siegelbaum & The RICE Group, 2002	Potential cluster variable
	I control the water use when taking a shower	2	2.1	Miao & Wei, 2013	Potential cluster variable
	I let water run until it is the right temperature	2	2.1	Miao & Wei, 2013	Potential cluster variable
8	Is there anything preventing you from participating	2	2.1	DEFRA, 2009; UKWIR,	Barriers for SM campaign

	in water saving initiatives in tourism accommodation? If so, what is it?			2014; Miller, *et al.*, 2014; Barr, *et al.*, 2010; Dolnicar & Grün, 2012; Shaw, *et al.*, 2013	
9	What would encourage you to participate more in water saving initiatives in tourism accommodation?	2	2.1	DEFRA, 2009; UKWIR, 2014; Miller, *et al.*, 2014; Barr, *et al.*, 2010; Dolnicar & Grün, 2012; Shaw, *et al.*, 2013	Barriers for SM campaign
10	How would each water saving initiatives affect your experience?	2, 3, 4	2.1, 3.1, 3.2, 3.3, 4.3	N/A	Feedback on initiatives
	A voucher for money off on concessions or your next stay if the towels or linens are not changed every day?	2, 3, 4	2.1, 3.1, 3.2, 3.3, 4.3	Shang, *et al.*, 2010	Feedback on initiatives
	Personalized measurement of how much water you used during your stay	2, 3, 4	2.1, 3.1, 3.2, 3.3, 4.3	Beal, Stewart, Fielding (2013)	Feedback on initiatives; not previously studied
	A donation to a charity by the accommodation if the towels or linens are not changed every day	2, 3, 4	2.1, 3.1, 3.2, 3.3, 4.3	Shang, *et al.*, 2010	Feedback on initiatives
	A light turning on in the shower indicating the shower has run for over 5 minutes	2, 3, 4	2.1, 3.1, 3.2, 3.3, 4.3	Tiefenbeck, *et al.*, 2013	Feedback on initiatives
	Waterless urinals in the facility	2, 3, 4	2.1, 3.1, 3.2, 3.3, 4.3	N/A	Question asked by SWW Business Solutions
	A feedback card asking you for suggestions on how to improve the accommodation's environmental efforts	2, 3, 4	2.1, 3.1, 3.2, 3.3, 4.3	Gössling, *et al.,* 2015	Efforts to increase participation in literature: Feedback on initiatives
	Having the environmental efforts of the accommodation highlighted during your initial welcome introduction	2, 3, 4	2.1, 3.1, 3.2, 3.3, 4.3	N/A	Feedback on initiatives; not previously studied

	A message asking you to help use less water	2, 3, 4	2.1, 3.1, 3.2, 3.3, 4.3	Goldstein, *et al.*, 2008; Shang, *et al.,* 2010; Coles & Zschiegner, 2011; O'Neill & Siegelbaum & The RICE Group, 2002	Feedback on initiatives
11	To what extent would the following messages encourage you to use less water?	4	4.4	Goldstein, *et al.*, 2008; Shang, *et al.*, 2010; Coles & Zschiegner, 2011; O'Neill & Siegelbaum & The RICE Group, 2002; Shaw, *et al.*, 2013	Feedback on initiatives
	Other guests in this accommodation have expressed a desire for us to use less water, please aid us in the endeavour	4	4.4	Goldstein, *et al.,* 2008	Test against a persuasive message; similar to local efforts (CoAST)
	Heating and transporting water consumes a large amount of electricity, increasing greenhouse gases. For example, according to the Environment Agency, roughly 25% of electricity used in the home is for heating water. Please help us care for the environment by using only the water you need	4	4.4	Ofwat, 2011	Investigate linking the message to electricity
	Please promote our beautiful local environment by using less water	4	4.4	Goldstein, *et al.*, 2008	Test against a persuasive message
	Quack Quack is duck for "please save some water for me"	4	4.4	N/A	Created by a tourism manager
	Amazingly, of the 22 water supply areas in England and Wales, the Environment Agency classifies 12 as 'seriously water stressed'. It makes this	4	4.4	Ofwat, 2011	Idea generated by pilot

	assessment by comparing current and forecast rainfall per person with current and forecast household water demand per person. This accommodation is located in one of the stressed areas. Please help us care for the environment by using only the water you need				
	Would you like to suggest a message that would appeal to you and others?	4	4.4	Chathoth, *et al.*, 2014; Desai, 2009; Shaw, *et al.*, 2013	Opportunity for co-creation
12	Where would a message promoting water efficiency have most impact on you?	4	4.2	Goldstein, *et al.*, 2008; Shang, *et al.*, 2010; Gossling, *et al.*, 2015	Location is key and debate over where to place it by managers
13	What is the name of you water company?	3, 4	3.3, 4.2	DEFRA, 2009; UKWIR, 2014; Miller, *et al.*, 2014; Barr, *et al.*, 2010	Independent Variable
14	At home our property is:	2	2.2	DEFRA, 2009; UKWIR, 2014; CCWater, 2006	Independent Variable; A key indicator for water behaviour in the home
15	When at home:	2	2.2	N/A	Measure behaviour
	I take longer showers when shorter would do	2	2.2	Miao & Wei, 2013	Potential cluster variable
	I take baths instead of showers to save water	2	2.2	Miao & Wei, 2013	Potential cluster variable
	I leave the takes on when we brush our teeth	2	2.2	Miao & Wei, 2013	Potential cluster variable
	I stay in tourism accommodation that is certified as environmentally responsible	2	2.2	DEFRA, 2009; UKWIR, 2014; CCWater, 2006	Potential cluster variable
	I take multiple showers/baths in a day	2	2.2	Miao & Wei, 2013	Potential cluster variable
	I fill the kettle only to the amount of water needed	2	2.2	Miao & Wei, 2013	Potential cluster variable
	I buy water efficient appliances	2	2.2	DEFRA, 2009; UKWIR, 2014;	Potential cluster variable

				CCWater, 2006	
	I fill the kettle over the amount needed for my hot drinks	2	2.2	DEFRA, 2009; UKWIR, 2014; CCWater, 2006	Potential cluster variable
	I use rainwater when possible (e.g. to water the garden, to wash my car, etc.)	2	2.2	DEFRA, 2009; UKWIR, 2014; CCWater, 2006	Potential cluster variable
	I run the washing machine when it is not full	2	2.2	DEFRA, 2009; UKWIR, 2014; CCWater, 2006	Potential cluster variable
	I have water leaks fixed as quickly as possible	2	2.2	DEFRA, 2009; UKWIR, 2014; CCWater, 2006	Potential cluster variable
16	Overall, please indicate your effort to save water at home	2	2.2	DEFRA, 2009; UKWIR, 2014; Miller, *et al.* 2014; Barr, *et al.*, 2010	Compare home/away; understand overall effort on holiday
17	Overall, please compare your effort to save water at home to when in tourism accommodation	2	2.1, 2.2	DEFRA, 2009; UKWIR, 2014; Miller, *et al.*, 2014; Barr, *et al.*, 2010	Compare home/away; potential clustering variable
18	In the past year, how many nights have you stayed in a tourism accommodation (anywhere in the world) for business and holiday?	2	2.1	Millar, Mayer & Baloglu, 2012; Barr, *et al.,* 2011b	Independent Variable
19	Your gender	2	2.1, 2.2	Barr, *et al.*, 2010; DEFRA, 2009; Miller, *et al.*, 2014; UKWIR, 2014	Independent Variable
20	Your age	2	2.1, 2.2	Barr, *et al.*, 2010; DEFRA, 2009; Miller, *et al.*, 2010; Miller, *et al.*, 2014; UKWIR, 2014	Independent Variable; A key indicator for water behaviour in the home
21	Which best describes your occupation?	2	2.1, 2.2	*Barr, et al.*, 2010; DEFRA, 2009; Miller, *et al.*, 2010;	Independent Variable

				Miller, *et al.*, 2014; UKWIR, 2014	
22	What is your housing situation?	2	2.1, 2.2	DEFRA, 2009; UKWIR, 2014	Independent Variable
23	What is your highest education qualification?	2	2.1, 2.2	Barr, *et al.*, 2010; Miller, *et al.,* 2010; Miller, *et al.*, 2014	Independent Variable
24	How many adults and children live in your household?	2	2.1, 2.2	Barr, *et al.*, 2010; DEFRA, 2009; Miller, *et al.*, 2010; Miller, *et al.*, 2014; UKWIR, 2014	Independent Variable
25	What is the total income of your household each year?	2	2.1, 2.2	Barr, *et al.*, 2010; DEFRA, 2009; Miller, *et al.*, 2010; Miller, *et al.*, 2014; UKWIR, 2014	Independent Variable

Source: Author.

Appendix 6: Delphi Survey: First Round.

Project Description

Thank you for participating in this Delphi consultation. A 'Delphi' is a series of survey events, with experts in a particular field, which aim to discover consensus on a topic. This is the first round of surveying which will ask you to prioritize initiatives aimed at increasing water efficiency within tourism accommodation. A subsequent questionnaire will be sent to you at a later date with results from this round, aiming to find consensus on prioritizing initiatives.

This three year research project is being conducted in South West England. The study area has few large tourism accommodation firms and is instead dominated by micro, small and medium sized businesses. This Delphi marks the final stage of research with the goal of determining how experts in water, marketing and tourism, rank and evaluate outcomes from previous stages.

To date, three focus groups and 16 subsequent semi-structured interviews with tourism accommodation managers were conducted. These efforts aimed to better understand how water is managed within tourism accommodation; how existing initiatives in the academic literature were perceived by accommodation managers; and, discover new ideas for promoting water efficiency both by guests and accommodation managers. From these findings, potential initiatives targeting both the business and the guest were realized. Following, a questionnaire measured reported water use behavior and how each initiative may affect the guest experience in tourism accommodation with 408 participants from England and Wales. From these previous stages, 10 potential initiatives have been realized. Again, this consultation aims to understand how you, the expert, ranks each initiative for implementation in South West England. The questionnaire is presented in one long section so you are able to reference descriptions of initiatives throughout. Five initiatives aiming to promote water efficient behavior by guests are presented and you will be asked to rank them based on priority for enactment. Then five initiatives aiming to promote management of water in a more efficient manner, by owners or managers, are presented and you are again asked to rank them. Finally, you will be asked to rank all initiatives at once. You will have the opportunity to comment on each initiative and why you ranked them in a given order throughout the consultation.

Findings will be used to provide recommendations to practitioners and water advocacy groups to reduce water usage in tourism accommodation. Again, as this consultation is aimed at discovering consensus, findings from this initial questionnaire will be presented and requests for further comments and re-ranking will be emailed to you at a later date.

Please note that this project has been granted acceptance by the University of Exeter ethics review board. Your participation is completely voluntary and you may stop at any time. Results from this study may be published in a PhD thesis and academic papers, though all answers will be reported anonymously. *

	Yes	No
Do you give permission to use your responses to further inform this project?	☐	☐

Please enter your initials so your participation can be recorded:

Initiatives Engaging Guests

1. Environmental Feedback Cards

Description:

Managers brainstormed the idea of environmental feedback cards where guests create solutions to improve the accommodation's environmental efforts. This idea has also been championed by Gössling, Hall and Scott (2015). Guests reported a high positive impact on their experience from being provided with feedback cards. Cards would be provided in each room and may encourage efficient behaviour by including guests in creating solutions (see example above). The accommodation logo is added to the card as Shang, Basil and Wymer (2010) find adding the company logo to any message decreases guest scepticism towards an initiative while a message that appears to be from a more generic source, increases egotistical attributions towards the accommodation.

Please respond to the following statement and add comments about this initiative if desired: *

	Strong disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
There is a high likelihood this initiative will increase water efficiency behaviour	☐	☐	☐	☐	☐

Comments:

2. Initial Welcome Introduction

Description:

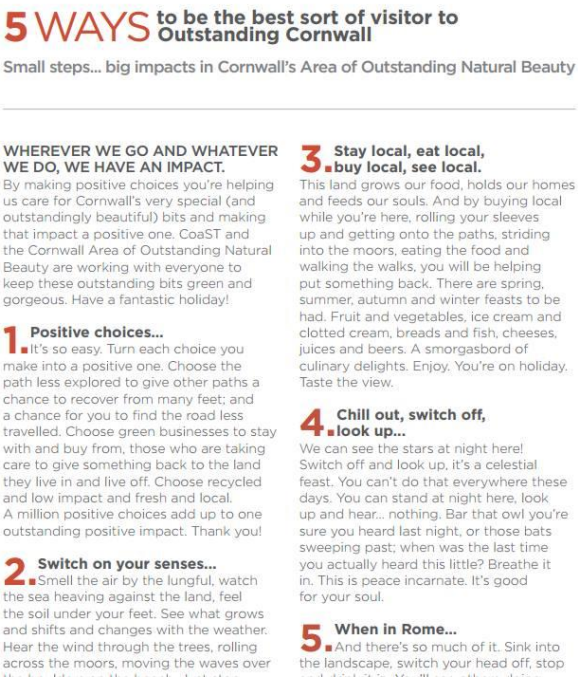
Some managers have begun verbally incorporating their environmental efforts into their initial welcome to ensure the guest knows they care for the environment. They hope this in turn establishes an expectation for caring for the environment and is an invitation to join the business in making an effort. Guests reported this would have a high positive impact on their experience. Managers practicing this initiative report increased customer engagement throughout the week and more care for resources (though these are only anecdotal reports). During the welcome, managers highlight different initiatives such as their towel reuse scheme or a water efficient appliance when explaining how to use and access things throughout the premises (see example above).

Please respond to the following statement and add comments about this initiative if desired: *

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
There is a high likelihood this initiative will increase water efficiency behaviour	☐	☐	☐	☐	☐

Comments:

3. Incentives



5 WAYS to be the best sort of visitor to Outstanding Cornwall

Small steps... big impacts in Cornwall's Area of Outstanding Natural Beauty

WHEREVER WE GO AND WHATEVER WE DO, WE HAVE AN IMPACT.
By making positive choices you're helping us care for Cornwall's very special (and outstandingly beautiful) bits and making that impact a positive one. CoaST and the Cornwall Area of Outstanding Natural Beauty are working with everyone to keep these outstanding bits green and gorgeous. Have a fantastic holiday!

1. Positive choices...
It's so easy. Turn each choice you make into a positive one. Choose the path less explored to give other paths a chance to recover from many feet; and a chance for you to find the road less travelled. Choose green businesses to stay with and buy from, those who are taking care to give something back to the land they live in and live off. Choose recycled and low impact and fresh and local. A million positive choices add up to one outstanding positive impact. Thank you!

2. Switch on your senses...
Smell the air by the lungful, watch the sea heaving against the land, feel the soil under your feet. See what grows and shifts and changes with the weather. Hear the wind through the trees, rolling across the moors, moving the waves over

3. Stay local, eat local, buy local, see local.
This land grows our food, holds our homes and feeds our souls. And by buying local while you're here, rolling your sleeves up and getting onto the paths, striding into the moors, eating the food and walking the walks, you will be helping put something back. There are spring, summer, autumn and winter feasts to be had. Fruit and vegetables, ice cream and clotted cream, breads and fish, cheeses, juices and beers. A smorgasbord of culinary delights. Enjoy. You're on holiday. Taste the view.

4. Chill out, switch off, look up...
We can see the stars at night here! Switch off and look up, it's a celestial feast. You can't do that everywhere these days. You can stand at night here, look up and hear... nothing. Bar that owl you're sure you heard last night, or those bats sweeping past; when was the last time you actually heard this little? Breathe it in. This is peace incarnate. It's good for your soul.

5. When in Rome...
And there's so much of it. Sink into the landscape, switch your head off, stop

Description:

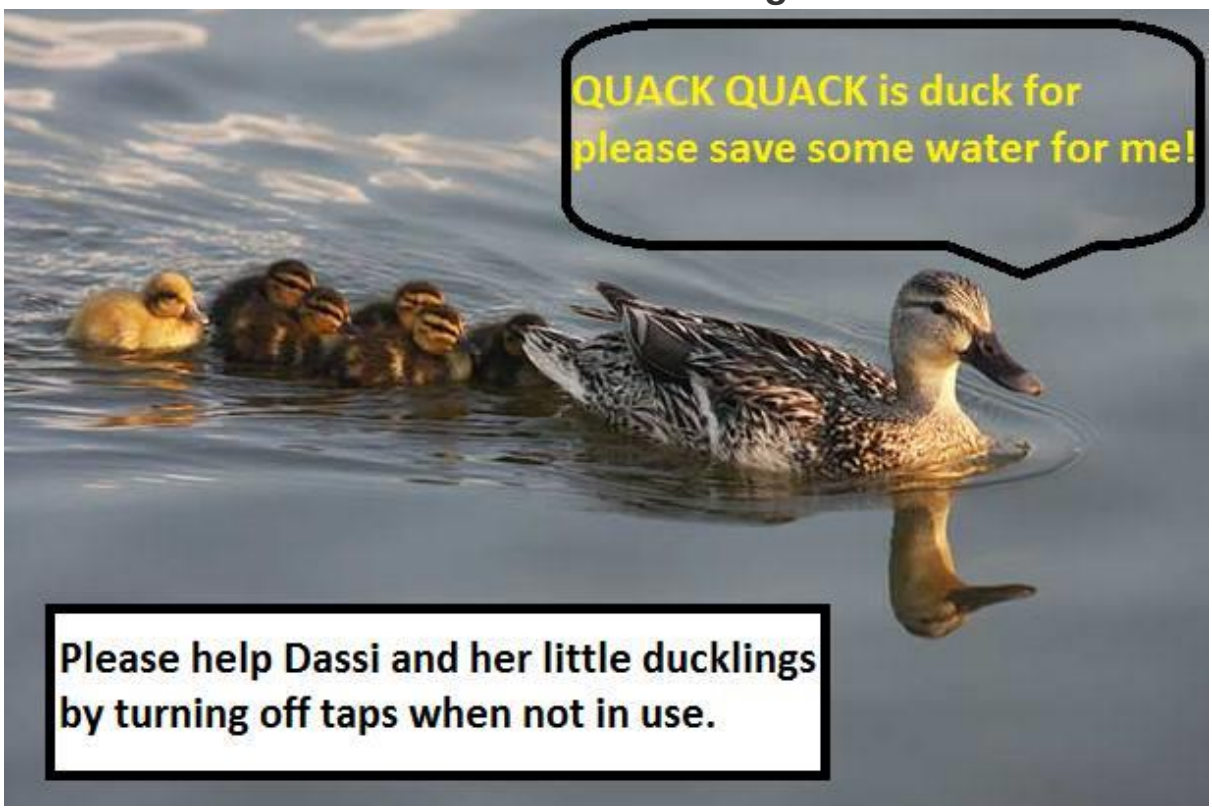
Some larger companies have begun providing rewards or donating to charity when guests participate in towel reuses schemes (i.e. Starwood Hotels, ACCOR). In this study, guests reported rewards and then donations to charity would have the highest positive impact on their experience of all proposed initiatives. Additionally, Shang, Basil and Wymer (2010) find donations to charity for towel reuse schemes significantly increase guests' perceptions of a hotel's values, attitudes toward the hotel, and behavioural intentions. However, due to the size of many tourism accommodations in the South West, managers stated they did not have the infrastructure to support such an initiative. A potential solution is a region wide scheme, run by a third party (e.g. company or non-profit), allowing businesses to offer small vouchers (e.g. £5 off) for the next stay or donations to charity if individuals sign a commitment to joining the business in their efforts to save water and energy during their stay. Research on towel reuse schemes has shown that making public commitments to participating in the scheme, significantly increases the likelihood of reuse (Baca-motes, et al., 2013) and it is therefore believed that it will also encourage other forms of water efficiency behaviour (e.g. turning off taps when not in use, reporting leaks, etc.). This would be a public commitment on a third party website during the booking phase, or during, their stay at the accommodation. Charters outlining how to be good visitors already exist in some parts of the South West (see example above from the non-profit CoaST Network) and could be used as an outline for the commitment.

Please respond to the following statement and add comments about this initiative if desired: *

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
There is a high likelihood this initiative will increase water efficiency behaviour	☐	☐	☐	☐	☐

Comments:

4. Child Focused Messages



Description:

Of all initiatives, managers reported the strongest interest in messaging to guests, asking them to help save water. However, guests reported a relatively low positive impact on their experience from this initiative. Managers reviewed past messages and reported they were too 'boring' and rigid. Their idea was to target children with messages and in turn potentially have kids affect the behaviour of their parents. These messages would aim to be 'fun' and would be distributed as stickers to place in tourism accommodation bathrooms. Again, a company logo would be advisable to decrease scepticism (Shang, Basil & Wymer, 2010).

Please respond to the following statement and add comments about this initiative if desired:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
There is a high likelihood this initiative will increase water efficiency behaviour	☐	☐	☐	☐	☐

Comments:

5. Remove Competing Behaviours

Description:

This initiative is about removing barriers and competing water consumptive behaviours in the tourism accommodation to make saving water easier for guests. For example, of all water wasting behaviours measured in this study, guests reported the highest occurrence of allowing taps to run until the desired temperature was reached. Guests also stated limitations in the facility were a barrier to saving water. Therefore, implementing instant hot water heaters, also known as 'on-demand', systems could reduce the amount of time taps run between waiting for the temperature to change. Additionally, as an example, guests reported a relatively low importance of a bath in making their last tourism accommodation booking. Managers are aware of this low desire and the fact that baths use substantially more water than showers. As a result, some accommodation managers in this study reported removing them from their facilities to ensure guests use showers and not baths. These are only two examples while other examples could include: only providing one towel per guest for their whole stay unless they specifically request another; low flow appliances such as shower heads, tap aerators and toilets; and, separate cold and hot taps to make changes in temperature quicker.

Please respond to the following statement and add comments about this initiative if desired:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
There is a high likelihood this initiative will increase water efficiency behaviour	☐	☐	☐	☐	☐

Comments:

Next we will be prioritizing initiatives. To establish how you prioritize them, please first indicate the importance of each factor in ranking initiatives? *

	Very unimportant	Unimportant	Neither important nor unimportant	Important	Very Important
Financial costs	☐	☐	☐	☐	☐
Desire of tourism accommodation businesses to implement	☐	☐	☐	☐	☐
Likelihood to change guest behaviour	☐	☐	☐	☐	☐
Previously established evidence supporting positive outcomes	☐	☐	☐	☐	☐
Likelihood to change businesses' management of water	☐	☐	☐	☐	☐
High level of support from other stakeholders (i.e. Government, non-profits, water company, media, etc.)	☐	☐	☐	☐	☐
Likelihood to have minimal negative effects on the guest experience	☐	☐	☐	☐	☐
Overall amount of water likely to be saved through the initiative	☐	☐	☐	☐	☐
Feasibility of implementation	☐	☐	☐	☐	☐
Contains measurable outcomes for evaluation purposes	☐	☐	☐	☐	☐

Would you like to add any other important factors not stated above?

Initiatives Engaging Managers/Owners

1. Green Business Scheme with Added Incentives

Description:

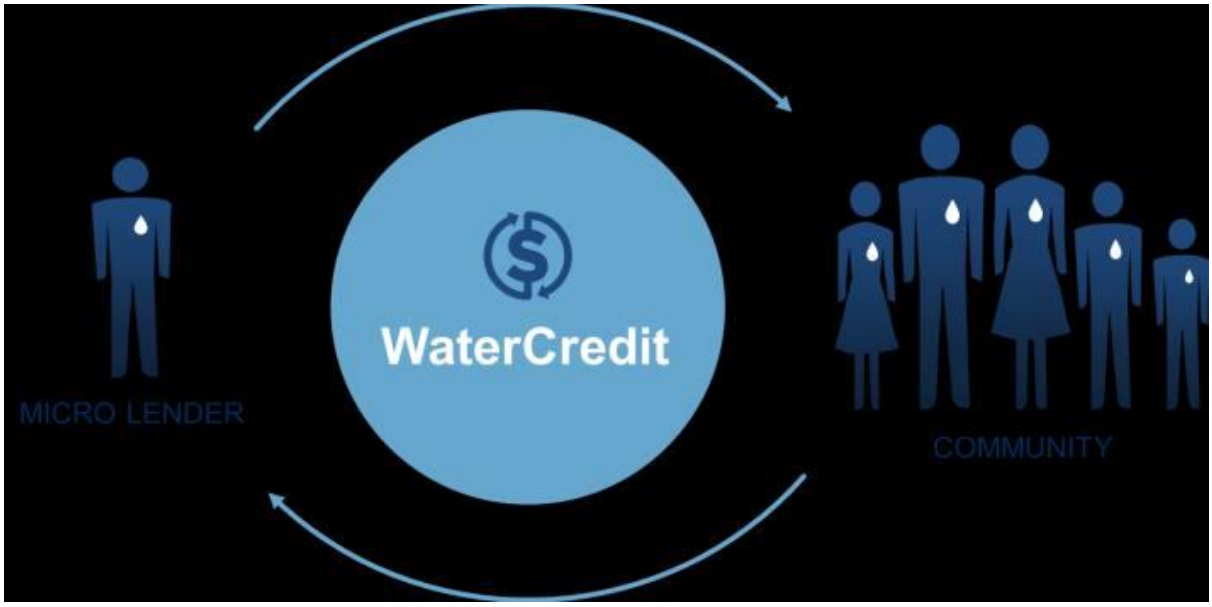
Many managers participating in this study were involved in green tourism certification schemes. Overwhelmingly, they reported feeling their certification had not brought them a single booking and were uncertain of the value of the certification. One idea presented by an owner was to increase the services provided by certification programs (i.e. Green Tourism Business Scheme and VisitEngland's star rating) or create a new certification scheme offering additional services. These services could include access to customer lists; promotions; top tips; inclusion into buyers clubs and low cost water/energy audits along with the normal certification. For reference, buying clubs are groups formed to pool members collective buying power, enabling them to make purchases at lower prices than normal.

Please respond to the following statement and add comments about this initiative if desired: *

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
There is a high likelihood this initiative will increase water efficiency behaviour	☐	☐	☐	☐	☐

Comments:

2. Low Interest Loans



Description:

Initial costs were identified as a major limitation to implementing water efficient technologies. Small loans at low interest rates for technologies with short payback periods could promote businesses to invest in water efficient technologies (e.g. low flush toilets, washing machines, solar water heaters, etc.). Such loans could be offered by buying clubs which already exist in some counties or by other water related stakeholders (e.g. water companies, Defra, etc...). While the example above is through Water.org and is specific to microloans (for the world's poor), it provides a template for how this initiative could target accommodations in an effort to eliminate the stated barrier of initial investment costs.

Please respond to the following statement and add comments about this initiative if desired:

*****

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
There is a high likelihood this initiative will increase water efficiency behaviour	☐	☐	☐	☐	☐

Comments:

3. Increased Academic Research & Collaboration

Description:

When asked about previous academic research on water efficiency, every tourism accommodation manager in this study reported they had no previous exposure to such findings. This was not due to a lack of curiosity, as interest was very high, but instead a lack of availability. This initiative would call for both an increase in academic research directly with water related stakeholders and the dissemination of findings through 'open sources,' presented in 'non-academic speech', to increase impact of such work.

Please respond to the following statement and add comments about this initiative if desired: *

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
There is a high likelihood this initiative will increase water efficiency behaviour	☐	☐	☐	☐	☐

Comments:

4. Green Ambassador Open House & Discussion

Description:

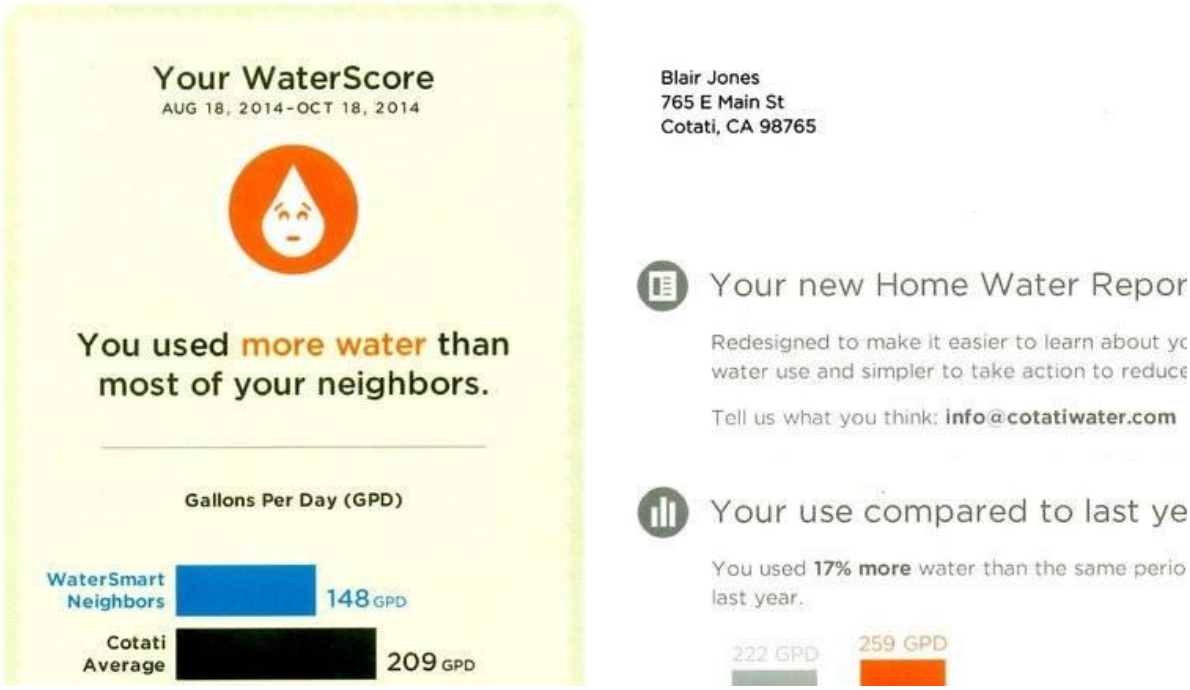
Several managers expressed a desire to act as a spokesperson for water efficiency to other tourism accommodation managers. A system would be established to aid volunteer managers to host an open house with other tourism accommodation managers to share their successes and discuss ideas for managing resource use. While similar peer to peer networks exist in some areas, this effort could increase their exposure and create a means for new connections specific to water. Additionally, managers stated they did not trust many of the sources of information trying to sell them on certain technologies and practices. Thus, the face-to-face networking would allow peers to exchange ideas and best practices in a trusted environment.

Please respond to the following statement and add comments about this initiative if desired: *

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
There is a high likelihood this initiative will increase water efficiency behaviour	☐	☐	☐	☐	☐

Comments:

5. Meaningful Units of Measurement



Description:

During manager interviews, several individuals expressed that using water by the cubic metre had very little meaning to them. One manager suggested that if the unit of measurement was in financial terms (£), smaller units (litters of water) or something more relatable, their water bill would be more meaningful and potentially affect how they managed it within their business. An effort by California company Water Smart Software (see example above) has shown to reduce water usage by 5% over a one year period in homes. Bills use comparisons with neighbours and display usage with monetary value and a facial expression. A happy face shows you are saving more water, and money, than others and a sad face shows the opposite. This type of alternative unit of measurement would be used with businesses to encourage more stringent water management.

Please respond to the following statement and add comments about this initiative if desired: *

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
There is a high likelihood this initiative will increase water efficiency behaviour	☐	☐	☐	☐	☐

Comments:

Please rank <u>all</u> of the initiatives based on which should be most prioritized for enactment (1= highest priority; 10= lowest priority) *

Feedback card	
Initial welcome introduction	
Incentives	
Child focused messages	
Remove competing behaviours	
Green business scheme with added incentives	
Low interest loans	
Increased academic research & collaboration	
Green ambassador open house and discussion	
Meaningful units of measurement	

Appendix 7: Relationships between Sample and Travel Characteristics and the Money-Off Voucher Initiative.

Characteristics	$\bar{x}$	χ^2	P
Gender[u]		18511	0.09
Male	3.93		
Female	4.06		
Age		13.03	0.11
18-19	4.39		
20-24	4.26		
25-29	4.08		
30-34	3.91		
35-44	3.96		
45-59	3.84		
60-64	3.92		
65-74	4.05		
>74	4.00		
Total household income		7.61	0.37
<£9,999	4.06		
£10,000-£19,999	3.91		
£20,000-£29,999	3.81		
£30,000-£39,999	4.11		
£40,000-£49,999	4.15		
£50,000-£74,999	4.06		
£75,000-£100,000	3.94		
>£100,000	4.44		
Prefer not to say	3.88		
Highest educational qualification		9.11	0.06
GCSE/NVQ	3.78		
A/AS Level/GNVG	4.06		
Bachelor's Degree	4.08		
Master's	4.17		
Doctorate	3.93		
Number of individuals in household	-	10.33	0.33
Presence of children in household[u]	3.92	18689	0.13
No children in household	4.06		
Housing situation		5.23	0.39
Home owned outright	3.97		
Home owned with mortgage or loan	4.01		
Shared ownership	3.80		
Let from council	3.80		
Let from private landlord or letting agency	4.09		
Other	4.24		
Water meter status		3.74	0.15
On a water meter	4.06		
Unmetered	3.97		
Has its own water supply	3.44		
Differences in water company+	-	15.46	0.80
Occupation[a]		18.48	0.00
Higher managerial, administrative or professional	4.08		
Intermediate managerial, administrative or professional	3.88		
Supervisory or clerical and junior managerial, administrative or professional	4.16		
Skilled manual worker	3.69		
Semi and unskilled manual worker	3.69		
Casual or non-worker	4.22		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

Characteristics	$\bar{x}$	χ^2	P
Type of accommodation		3.04	0.39
Hotel	4.01		
B&B	3.96		
Self-catering	3.81		
Campsite/ Caravan Park	4.13		
Motivation for travel[bu]			
To visit friends and relatives	3.97	16263	0.56
Holiday	4.03	14342	0.14
Business or for work	3.90	5152.5	0.55
Nights stayed in tourism accommodation per year for:			
Holiday		4.78	0.31
0-5	3.96		
5-10	3.96		
10-15	4.05		
15-20	3.94		
Over 20	4.29		
Business/work		0.26	0.99
0-5	4.00		
5-10	4.00		
10-15	4.05		
15-20	3.83		
Over 20	4.00		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Question allowing multiple responses (e.g. tick all that apply)

Source: Author.

Appendix 8: Relationships between Sample and Travel Characteristics and the Donation to Charity Initiative.

Characteristics	$\bar{x}$	χ^2	P
Gender[ua]		17852	0.02
Male	3.45		
Female	3.67		
Age		13.16	0.10
18-19	3.89		
20-24	3.26		
25-29	3.79		
30-34	3.72		
35-44	3.49		
45-59	3.43		
60-64	3.25		
65-74	3.23		
>74	3.50		
Total household income		3.53	0.83
<£9,999	3.52		
£10,000-£19,999	3.45		
£20,000-£29,999	3.54		
£30,000-£39,999	3.72		
£40,000-£49,999	3.61		
£50,000-£74,999	3.63		
£75,000-£100,000	3.41		
>£100,000	3.78		
Prefer not to say	3.50		
Highest educational qualification[a]		12.17	0.02
GCSE/NVQ	3.38		
A/AS Level/GNVG	3.54		
Bachelor's Degree	3.65		
Master's	3.77		
Doctorate	3.93		
Number of individuals in household	-	10.16	0.33
Presence of children in household[u]	3.68	18817	0.17
No children in household	3.50		
Housing situation		4.72	0.45
Home owned outright	3.47		
Home owned with mortgage or loan	3.69		
Shared ownership	3.40		
Let from council	3.57		
Let from private landlord or letting agency	3.48		
Other	3.69		
Water meter status		0.42	0.80
On a water meter	3.59		
Unmetered	3.56		
Has its own water supply	3.44		
Differences in water company+	-	20.53	0.49
Occupation[a]		16.08	0.01
Higher managerial, administrative or professional	3.86		
Intermediate managerial, administrative or professional	3.33		
Supervisory or clerical and junior managerial, administrative or professional	3.59		
Skilled manual worker	3.41		
Semi and unskilled manual worker	3.41		
Casual or non-worker	3.85		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

Characteristics	$\bar{x}$	χ^2	P
Type of accommodation		5.95	0.11
Hotel	3.62		
B&B	3.42		
Self-catering	3.38		
Campsite/ Caravan Park	3.69		
Motivation for travel[bu]			
To visit friends and relatives	3.57	16751.5	0.93
Holiday	3.57	15631	0.86
Business or for work	3.66	5266.5	0.70
Nights stayed in tourism accommodation per year for:			
Holiday		1.66	0.80
0-5	3.59		
5-10	3.59		
10-15	3.54		
15-20	3.47		
Over 20	3.68		
Business/work		5.49	0.24
0-5	3.56		
5-10	3.49		
10-15	4.00		
15-20	3.33		
Over 20	4.33		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Question allowing multiple responses (e.g. tick all that apply)

Source: Author.

Appendix 9: Relationships between Sample and Travel Characteristics and the Feedback Card Initiative.

Characteristics	$\bar{x}$	χ^2	P
Gender[u]		20351	0.97
Male	3.46		
Female	3.45		
Age		8.49	0.39
18-19	3.67		
20-24	3.33		
25-29	3.45		
30-34	3.66		
35-44	3.49		
45-59	3.28		
60-64	3.46		
65-74	3.45		
>74	3.25		
Total household income		8.50	0.39
<£9,999	3.32		
£10,000-£19,999	3.54		
£20,000-£29,999	3.25		
£30,000-£39,999	3.47		
£40,000-£49,999	3.52		
£50,000-£74,999	3.54		
£75,000-£100,000	3.71		
>£100,000	3.33		
Prefer not to say	3.35		
Highest educational qualification		6.99	0.14
GCSE/NVQ	3.40		
A/AS Level/GNVG	3.46		
Bachelor's Degree	3.40		
Master's	3.50		
Doctorate	3.93		
Number of individuals in household	-	14.35	0.11
Presence of children in household[ua]	3.59	18094	0.04
No children in household	3.35		
Housing situation		2.43	0.79
Home owned outright	3.35		
Home owned with mortgage or loan	3.49		
Shared ownership	3.80		
Let from council	3.50		
Let from private landlord or letting agency	3.46		
Other	3.45		
Water meter status		1.04	0.60
On a water meter	3.42		
Unmetered	3.49		
Has its own water supply	3.22		
Differences in water company+	-	24.30	0.30
Occupation[a]		9.50	0.09
Higher managerial, administrative or professional	3.86		
Intermediate managerial, administrative or professional	3.34		
Supervisory or clerical and junior managerial, administrative or professional	3.41		
	3.40		
Skilled manual worker	3.34		
Semi and unskilled manual worker	3.52		
Casual or non-worker			

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

Characteristics	$\bar{x}$	χ^2	P
Type of accommodation		5.56	0.135
Hotel	3.41		
B&B	3.69		
Self-catering	3.33		
Campsite/ Caravan Park	3.42		
Motivation for travel[bu]			
To visit friends and relatives	3.50	16359	0.62
Holiday	3.44	15696	0.91
Business or for work	3.62	4856	0.26
Nights stayed in tourism accommodation per year for:			
Holiday		5.59	0.23
0-5	3.57		
5-10	3.38		
10-15	3.50		
15-20	3.38		
Over 20	3.21		
Business/work		4.31	0.37
0-5	3.42		
5-10	3.64		
10-15	3.45		
15-20	3.33		
Over 20	4.0		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Question allowing multiple responses (e.g. tick all that apply)

Source: Author.

Appendix 10: Relationships between Sample and Travel Characteristics and the Initial Welcome Introduction Initiative.

Characteristics	$\bar{x}$	χ^2	P
Gender[u]		19166	0.27
Male	3.35		
Female	3.48		
Age		9.55	0.30
18-19	3.83		
20-24	3.33		
25-29	3.37		
30-34	3.52		
35-44	3.57		
45-59	3.31		
60-64	3.21		
65-74	3.41		
>74	3.00		
Total household income		3.33	0.85
<£9,999	3.16		
£10,000-£19,999	3.46		
£20,000-£29,999	3.43		
£30,000-£39,999	3.46		
£40,000-£49,999	3.52		
£50,000-£74,999	3.42		
£75,000-£100,000	3.35		
>£100,000	3.33		
Prefer not to say	3.38		
Highest educational qualification		1.58	0.81
GCSE/NVQ	3.39		
A/AS Level/GNVG	3.41		
Bachelor's Degree	3.47		
Master's	3.33		
Doctorate	3.67		
Number of individuals in household[a]	-	18.77	0.03
Presence of children in household[ua]	3.59	17484	0.00
No children in household	3.30		
Housing situation		6.86	0.23
Home owned outright	3.19		
Home owned with mortgage or loan	3.50		
Shared ownership	3.40		
Let from council	3.54		
Let from private landlord or letting agency	3.47		
Other	3.55		
Water meter status		0.94	0.63
On a water meter	3.42		
Unmetered	3.44		
Has its own water supply	3.22		
Differences in water company+		25.65	0.22
Occupation		8.08	0.15
Higher managerial, administrative or professional	3.62		
Intermediate managerial, administrative or professional	3.24		
Supervisory or clerical and junior managerial, administrative or professional	3.48		
	3.22		
Skilled manual worker	3.56		
Semi and unskilled manual worker	3.52		
Casual or non-worker			

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

Characteristics	$\bar{x}$	χ^2	P
Type of accommodation		0.52	0.92
Hotel	3.38		
B&B	3.49		
Self-catering	3.40		
Campsite/ Caravan Park	3.49		
Motivation for travel[bu]			
To visit friends and relatives	3.37	16090.5	0.45
Holiday	3.44	14874	0.34
Business or for work	3.48	5331	0.78
Nights stayed in tourism accommodation per year for:			
Holiday		5.25	0.26
0-5	3.52		
5-10	3.36		
10-15	3.46		
15-20	3.23		
Over 20	3.41		
Business/work		1.42	0.84
0-5	3.40		
5-10	3.51		
10-15	3.45		
15-20	3.50		
Over 20	4.00		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Question allowing multiple responses (e.g. tick all that apply)

Source: Author.

Appendix 11: Relationships between Sample and Travel Characteristics and the Message Asking to Help Initiative.

Characteristics	$\bar{x}$	χ^2	P
Gender[u]		19849	0.63
Male	3.38		
Female	3.35		
Age		11.84	0.16
18-19	3.67		
20-24	3.07		
25-29	3.35		
30-34	3.53		
35-44	3.46		
45-59	3.16		
60-64	3.54		
65-74	3.45		
>74	3.25		
Total household income		7.52	0.38
<£9,999	3.06		
£10,000-£19,999	3.30		
£20,000-£29,999	3.51		
£30,000-£39,999	3.45		
£40,000-£49,999	3.39		
£50,000-£74,999	3.35		
£75,000-£100,000	3.12		
>£100,000	3.56		
Prefer not to say	3.35		
Highest educational qualification		6.08	0.19
GCSE/NVQ	3.30		
A/AS Level/GNVG	3.48		
Bachelor's Degree	3.31		
Master's	3.23		
Doctorate	3.73		
Number of individuals in household	-	13.89	0.13
Presence of children in household[u]	3.44	19317	0.35
No children in household	3.31		
Housing situation		5.328	0.38
Home owned outright	3.29		
Home owned with mortgage or loan	3.47		
Shared ownership	3.80		
Let from council	3.33		
Let from private landlord or letting agency	3.22		
Other	3.59		
Water meter status		0.65	0.72
On a water meter	3.40		
Unmetered	3.32		
Has its own water supply	3.44		
Differences in water company+	-	25.57	0.22
Occupation		0.79	0.98
Higher managerial, administrative or professional	3.46		
Intermediate managerial, administrative or professional	3.26		
Supervisory or clerical and junior managerial, administrative or professional	3.38		
	3.34		
Skilled manual worker	3.38		
Semi and unskilled manual worker	3.41		
Casual or non-worker			

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

Characteristics	$\bar{x}$	χ^2	P
Type of accommodation		1.65	0.65
Hotel	3.35		
B&B	3.43		
Self-catering	3.21		
Campsite/ Caravan Park	3.43		
Motivation for travel[bu]			
To visit friends and relatives	3.41	16314	0.60
Holiday	3.35	15413	0.69
Business or for work	3.41	5160.5	0.56
Nights stayed in tourism accommodation per year for:			
Holiday		2.12	0.71
0-5	3.45		
5-10	3.28		
10-15	3.33		
15-20	3.40		
Over 20	3.29		
Business/work		3.48	0.48
0-5	3.37		
5-10	3.20		
10-15	3.35		
15-20	3.50		
Over 20	4.33		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Question allowing multiple responses (e.g. tick all that apply)

Source: Author.

Appendix 12: Relationships between Sample and Travel Characteristics and the Light in the Shower Initiative.

Characteristics	$\bar{x}$	χ^2	P
Gender[u]		20282	0.93
Male	3.26		
Female	3.26		
Age		3.57	0.89
18-19	3.28		
20-24	3.12		
25-29	3.28		
30-34	3.34		
35-44	3.36		
45-59	3.18		
60-64	3.33		
65-74	3.05		
>74	3.50		
Total household income		3.33	0.85
<£9,999	3.23		
£10,000-£19,999	3.18		
£20,000-£29,999	3.13		
£30,000-£39,999	3.33		
£40,000-£49,999	3.35		
£50,000-£74,999	3.23		
£75,000-£100,000	3.18		
>£100,000	3.44		
Prefer not to say	3.50		
Highest educational qualification		4.65	0.33
GCSE/NVQ	3.25		
A/AS Level/GNVG	3.28		
Bachelor's Degree	3.24		
Master's	3.13		
Doctorate	3.73		
Number of individuals in household[a]	-	20.68	0.01
Presence of children in household[ua]	3.43	17226	0.00
No children in household	3.13		
Housing situation		10.44	0.06
Home owned outright	3.10		
Home owned with mortgage or loan	3.24		
Shared ownership	3.60		
Let from council	3.56		
Let from private landlord or letting agency	3.18		
Other	3.52		
Water meter status		1.52	0.47
On a water meter	3.32		
Unmetered	3.20		
Has its own water supply	3.33		
Differences in water company+	-	21.53	0.43
Occupation		1.92	0.86
Higher managerial, administrative or professional	3.38		
Intermediate managerial, administrative or professional	3.29		
Supervisory or clerical and junior managerial, administrative or professional	3.16		
Skilled manual worker	3.28		
Semi and unskilled manual worker	3.38		
Casual or non-worker	3.27		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

Characteristics	$\bar{x}$	χ^2	P
Type of accommodation		4.49	0.21
Hotel	3.26		
B&B	3.30		
Self-catering	3.00		
Campsite/ Caravan Park	3.38		
Motivation for travel[bu]			
To visit friends and relatives	3.34	16042.5	0.43
Holiday	3.27	15156.5	0.51
Business or for work	3.31	5367	0.83
Nights stayed in tourism accommodation per year for:			
Holiday		1.54	0.81
0-5	3.33		
5-10	3.20		
10-15	3.16		
15-20	3.30		
Over 20	3.35		
Business/work		2.44	0.66
0-5	3.24		
5-10	3.22		
10-15	3.50		
15-20	3.50		
Over 20	4.00		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Question allowing multiple responses (e.g. tick all that apply)

Source: Author.

Appendix 13: Relationships between Sample and Travel Characteristics and the Personalized Measurement Initiative.

Characteristics	$\bar{x}$	χ^2	P
Gender[u]		19851	0.64
Male	3.21		
Female	3.15		
Age[a]		20.69	0.00
18-19	3.78		
20-24	3.00		
25-29	3.21		
30-34	3.41		
35-44	3.34		
45-59	3.05		
60-64	2.75		
65-74	2.59		
>74	3.25		
Total household income		4.83	0.68
<£9,999	3.19		
£10,000-£19,999	3.33		
£20,000-£29,999	3.01		
£30,000-£39,999	3.18		
£40,000-£49,999	3.20		
£50,000-£74,999	3.08		
£75,000-£100,000	2.82		
>£100,000	3.22		
Prefer not to say	3.45		
Highest educational qualification		3.23	0.52
GCSE/NVQ	3.13		
A/AS Level/GNVG	3.21		
Bachelor's Degree	3.23		
Master's	2.96		
Doctorate	3.53		
Number of individuals in household[a]	-	19.87	0.02
Presence of children in household[ua]	3.35	17700	0.02
No children in household	3.05		
Housing situation		17.00	0.00
Home owned outright	2.94		
Home owned with mortgage or loan	3.25		
Shared ownership	3.40		
Let from council	3.37		
Let from private landlord or letting agency	2.99		
Other	3.83		
Water meter status		3.52	0.17
On a water meter	3.27		
Unmetered	3.10		
Has its own water supply	2.89		
Differences in water company+	-	20.95	0.46
Occupation		4.96	0.42
Higher managerial, administrative or professional	3.41		
Intermediate managerial, administrative or professional	3.08		
Supervisory or clerical and junior managerial, administrative or professional	3.10		
	3.07		
Skilled manual worker	3.16		
Semi and unskilled manual worker	3.38		
Casual or non-worker			

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

Characteristics	$\bar{x}$	χ^2	P
Type of accommodation		1.82	0.61
Hotel	3.22		
B&B	3.12		
Self-catering	3.02		
Campsite/ Caravan Park	3.20		
Motivation for travel[bu]			
To visit friends and relatives	3.29	15622	0.24
Holiday	3.12	14188.5	0.11
Business or for work	3.41	4702	0.18
Nights stayed in tourism accommodation per year for:			
Holiday		8.83	0.07
0-5	3.36		
5-10	3.21		
10-15	3.07		
15-20	2.87		
Over 20	3.00		
Business/work		6.07	0.19
0-5	3.15		
5-10	3.22		
10-15	3.55		
15-20	2.67		
Over 20	4.33		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Question allowing multiple responses (e.g. tick all that apply)

Source: Author.

Appendix 14: Relationships between Sample and Travel Characteristics and the Waterless Urinal Initiative.

Characteristics	$\bar{x}$	χ^2	P
Gender[ua]		17150	0.00
Male	2.93		
Female	2.63		
Age[a]		27.57	0.00
18-19	2.67		
20-24	2.38		
25-29	3.05		
30-34	2.97		
35-44	3.01		
45-59	2.50		
60-64	2.58		
65-74	2.23		
>74	2.25		
Total household income		7.08	0.42
<£9,999	2.81		
£10,000-£19,999	2.80		
£20,000-£29,999	2.88		
£30,000-£39,999	2.79		
£40,000-£49,999	2.81		
£50,000-£74,999	2.56		
£75,000-£100,000	2.94		
>£100,000	2.11		
Prefer not to say	2.54		
Highest educational qualification		3.67	0.45
GCSE/NVQ	2.85		
A/AS Level/GNVG	2.69		
Bachelor's Degree	2.67		
Master's	2.98		
Doctorate	2.67		
Number of individuals in household	-	6.77	0.66
Presence of children in household[ua]	2.94	17317	0.01
No children in household	2.62		
Housing situation		3.18	0.67
Home owned outright	2.64		
Home owned with mortgage or loan	2.79		
Shared ownership	2.80		
Let from council	2.94		
Let from private landlord or letting agency	2.77		
Other	2.59		
Water meter status		0.66	0.97
On a water meter	2.76		
Unmetered	2.75		
Has its own water supply	2.78		
Differences in water company+	-		
Occupation		4.39	0.49
Higher managerial, administrative or professional	3.00		
Intermediate managerial, administrative or professional	2.78		
Supervisory or clerical and junior managerial, administrative or professional	2.62		
	2.88		
Skilled manual worker	2.72		
Semi and unskilled manual worker	2.76		
Casual or non-worker			

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

Characteristics	$\bar{x}$	χ^2	P
Type of accommodation		1.39	0.71
Hotel	2.74		
B&B	2.81		
Self-catering	2.60		
Campsite/ Caravan Park	2.84		
Motivation for travel[bu]			
To visit friends and relatives	3.08	13657.5	0.20
Holiday	2.67	13017	0.10
Business or for work	2.90	5050	0.44
Nights stayed in tourism accommodation per year for:			
Holiday		5.59	0.23
0-5	2.87		
5-10	2.85		
10-15	2.63		
15-20	2.60		
Over 20	2.50		
Business/work[a]		10.52	0.03
0-5	2.68		
5-10	2.98		
10-15	3.30		
15-20	2.83		
Over 20	4.00		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Question allowing multiple responses (e.g. tick all that apply)

Source: Author.

Appendix 15: Relationships between Sample and Travel Characteristics and the 'Promote our Beautiful Local Environment' Message.

Characteristics	$\bar{x}$	χ^2	P
Gender[ua]		17937	0.03
Male	3.47		
Female	3.72		
Age		5.91	0.66
18-19	3.89		
20-24	3.48		
25-29	3.60		
30-34	3.81		
35-44	3.53		
45-59	3.50		
60-64	3.75		
65-74	3.68		
>74	3.75		
Total household income		9.56	0.22
<£9,999	3.26		
£10,000-£19,999	3.74		
£20,000-£29,999	3.52		
£30,000-£39,999	3.82		
£40,000-£49,999	3.69		
£50,000-£74,999	3.56		
£75,000-£100,000	3.41		
>£100,000	3.44		
Prefer not to say	3.50		
Highest educational qualification		4.14	0.39
GCSE/NVQ	3.44		
A/AS Level/GNVG	3.69		
Bachelor's Degree	3.65		
Master's	3.69		
Doctorate	3.67		
Number of individuals in household	-	13.11	0.16
Presence of children in household[u]	3.72	18394	0.08
No children in household	3.53		
Housing situation		7.10	0.21
Home owned outright	3.57		
Home owned with mortgage or loan	3.74		
Shared ownership	3.40		
Let from council	3.52		
Let from private landlord or letting agency	3.47		
Other	3.90		
Water meter status		0.80	0.67
On a water meter	3.63		
Unmetered	3.60		
Has its own water supply	3.56		
Differences in water company+	-		
Occupation		10.78	0.6
Higher managerial, administrative or professional	3.78		
Intermediate managerial, administrative or professional	3.35		
Supervisory or clerical and junior managerial, administrative or professional	3.74		
	3.43		
Skilled manual worker	3.72		
Semi and unskilled manual worker	3.71		
Casual or non-worker			

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

Characteristics	$\bar{x}$	χ^2	P
Type of accommodation		1.11	0.77
Hotel	3.61		
B&B	3.61		
Self-catering	3.48		
Campsite/ Caravan Park	3.69		
Motivation for travel[bu]			
To visit friends and relatives	3.55	15836	0.32
Holiday	3.65	14366.5	0.15
Business or for work	3.48	5073.5	0.47
Nights stayed in tourism accommodation per year for:			
Holiday		3.75	0.44
0-5	3.59		
5-10	3.50		
10-15	3.67		
15-20	3.68		
Over 20	3.91		
Business/work		1.52	0.82
0-5	3.60		
5-10	3.78		
10-15	3.55		
15-20	3.50		
Over 20	3.67		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Question allowing multiple responses (e.g. tick all that apply)

Source: Author.

Appendix 16: Relationships between Sample and Travel Characteristics and the 'Climate Change' Message.

Characteristics	$\bar{x}$	χ^2	P
Gender[u]		19692	0.54
Male	3.23		
Female	3.31		
Age		10.19	0.25
18-19	3.44		
20-24	2.95		
25-29	3.32		
30-34	3.42		
35-44	3.43		
45-59	3.14		
60-64	3.21		
65-74	3.09		
>74	4.00		
Total household income		12.95	0.07
<£9,999	3.13		
£10,000-£19,999	3.37		
£20,000-£29,999	3.13		
£30,000-£39,999	3.38		
£40,000-£49,999	3.19		
£50,000-£74,999	3.23		
£75,000-£100,000	4.00		
>£100,000	3.44		
Prefer not to say	3.00		
Highest educational qualification[a]		13.35	0.01
GCSE/NVQ	3.15		
A/AS Level/GNVG	3.30		
Bachelor's Degree	3.17		
Master's	3.52		
Doctorate	4.07		
Number of individuals in household	-	5.60	0.78
Presence of children in household[u]	3.36	18893	0.19
No children in household	3.21		
Housing situation		2.58	0.76
Home owned outright	3.23		
Home owned with mortgage or loan	3.30		
Shared ownership	3.60		
Let from council	3.17		
Let from private landlord or letting agency	3.26		
Other	3.55		
Water meter status		0.11	0.95
On a water meter	3.28		
Unmetered	3.27		
Has its own water supply	3.44		
Differences in water company+	-	23.55	0.32
Occupation		6.34	0.28
Higher managerial, administrative or professional	3.62		
Intermediate managerial, administrative or professional	3.26		
Supervisory or clerical and junior managerial, administrative or professional	3.21		
	3.10		
Skilled manual worker	3.41		
Semi and unskilled manual worker	3.30		
Casual or non-worker			

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

Characteristics	$\bar{x}$	χ^2	P
Type of accommodation		3.66	0.30
Hotel	3.24		
B&B	3.36		
Self-catering	3.08		
Campsite/ Caravan Park	3.41		
Motivation for travel[bu]			
To visit friends and relatives	3.28	16699	0.89
Holiday	3.29	15471	0.74
Business or for work	3.34	5259.5	0.69
Nights stayed in tourism accommodation per year for:			
Holiday		1.40	0.84
0-5	3.28		
5-10	3.26		
10-15	3.24		
15-20	3.23		
Over 20	3.47		
Business/work		9.53	0.05
0-5	3.20		
5-10	3.64		
10-15	3.60		
15-20	3.33		
Over 20	4.00		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Question allowing multiple responses (e.g. tick all that apply)

Source: Author.

Appendix 17: Relationships between Sample and Travel Characteristics and the 'Scarcity' Message.

Characteristics	$\bar{x}$	χ^2	P
Gender[u]		20144	0.83
Male	3.21		
Female	3.25		
Age		4.72	0.79
18-19	3.22		
20-24	3.02		
25-29	3.24		
30-34	3.36		
35-44	3.29		
45-59	3.14		
60-64	3.38		
65-74	3.14		
>74	3.75		
Total household income		8.96	0.26
<£9,999	3.23		
£10,000-£19,999	3.28		
£20,000-£29,999	3.12		
£30,000-£39,999	3.43		
£40,000-£49,999	3.00		
£50,000-£74,999	3.33		
£75,000-£100,000	3.59		
>£100,000	3.44		
Prefer not to say	2.81		
Highest educational qualification		5.73	0.22
GCSE/NVQ	3.15		
A/AS Level/GNVG	3.23		
Bachelor's Degree	3.18		
Master's	3.40		
Doctorate	3.73		
Number of individuals in household	-	6.58	0.68
Presence of children in household[u]	3.36		
No children in household	3.14		
Housing situation		4.69	0.46
Home owned outright	3.28		
Home owned with mortgage or loan	3.21		
Shared ownership	3.80		
Let from council	3.24		
Let from private landlord or letting agency	3.09		
Other	3.52		
Water meter status		0.14	0.93
On a water meter	3.24		
Unmetered	3.22		
Has its own water supply	3.22		
Differences in water company+			
Occupation		6.24	0.28
Higher managerial, administrative or professional	3.49		
Intermediate managerial, administrative or professional	3.18		
Supervisory or clerical and junior managerial, administrative or professional	3.25		
	2.97		
Skilled manual worker	3.31		
Semi and unskilled manual worker	3.32		
Casual or non-worker			

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

Characteristics	$\bar{x}$	χ^2	P
Type of accommodation		1.7	0.63
Hotel	3.25		
B&B	3.16		
Self-catering	3.08		
Campsite/ Caravan Park	3.32		
Motivation for travel[bu]			
To visit friends and relatives	3.28	16352.5	0.63
Holiday	3.24	15722	0.93
Business or for work	3.21	5488	0.99
Nights stayed in tourism accommodation per year for:			
Holiday		4.76	0.31
0-5	3.12		
5-10	3.19		
10-15	3.25		
15-20	3.45		
Over 20	3.47		
Business/work[a]		11.54	0.02
0-5	3.16		
5-10	3.44		
10-15	3.85		
15-20	3.33		
Over 20	4.00		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Question allowing multiple responses (e.g. tick all that apply)

Source: Author.

Appendix 18: Relationships between Sample and Travel Characteristics and the 'Other Guests' message.

Characteristics	$\bar{x}$	χ^2	P
Gender[u]		19046	0.23
Male	3.13		
Female	3.01		
Age		3.61	0.89
18-19	3.11		
20-24	3.00		
25-29	3.14		
30-34	3.19		
35-44	3.05		
45-59	2.93		
60-64	3.04		
65-74	2.95		
>74	3.50		
Total household income		7.84	0.35
<£9,999	2.90		
£10,000-£19,999	3.26		
£20,000-£29,999	3.00		
£30,000-£39,999	3.07		
£40,000-£49,999	2.89		
£50,000-£74,999	3.25		
£75,000-£100,000	3.12		
>£100,000	2.89		
Prefer not to say	2.81		
Highest educational qualification		9.21	0.06
GCSE/NVQ	2.95		
A/AS Level/GNVG	3.11		
Bachelor's Degree	2.96		
Master's	3.29		
Doctorate	3.53		
Number of individuals in household	-	12.33	0.20
Presence of children in household[ua]	3.19	18145	0.05
No children in household	2.97		
Housing situation		3.41	0.64
Home owned outright	3.10		
Home owned with mortgage or loan	3.11		
Shared ownership	3.40		
Let from council	3.02		
Let from private landlord or letting agency	2.90		
Other	3.21		
Water meter status		1.71	0.43
On a water meter	3.06		
Unmetered	3.05		
Has its own water supply	3.44		
Differences in water company+	-	34.75	0.30
Occupation		5.08	0.41
Higher managerial, administrative or professional	3.43		
Intermediate managerial, administrative or professional	3.06		
Supervisory or clerical and junior managerial, administrative or professional	3.02		
Skilled manual worker	2.98		
Semi and unskilled manual worker	3.09		
Casual or non-worker	3.00		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

Characteristics	$\bar{x}$	χ^2	P
Type of accommodation		5.62	0.13
Hotel	3.13		
B&B	3.07		
Self-catering	2.75		
Campsite/ Caravan Park	3.06		
Motivation for travel[bu]			
To visit friends and relatives	3.11	16266	0.57
Holiday	3.08	15333	0.63
Business or for work	3.17	5043	0.44
Nights stayed in tourism accommodation per year for:			
Holiday		1.12	0.89
0-5	3.07		
5-10	3.10		
10-15	3.09		
15-20	2.91		
Over 20	3.06		
Business/work[a]		25.14	0.00
0-5	2.94		
5-10	3.67		
10-15	3.40		
15-20	3.50		
Over 20	4.00		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Question allowing multiple responses (e.g. tick all that apply)

Source: Author.

Appendix 19: Relationships between Sample Characteristics and the Child Focused Message.

Characteristics	$\bar{x}$	χ^2	P
Gender[ua]		17424	0.01
Male	2.74		
Female	3.07		
Age		11.19	0.19
18-19	3.00		
20-24	2.83		
25-29	3.10		
30-34	3.23		
35-44	2.74		
45-59	2.90		
60-64	2.79		
65-74	2.50		
>74	2.75		
Total household income		7.82	0.35
<£9,999	3.06		
£10,000-£19,999	2.84		
£20,000-£29,999	2.88		
£30,000-£39,999	2.89		
£40,000-£49,999	2.80		
£50,000-£74,999	3.25		
£75,000-£100,000	3.12		
>£100,000	2.33		
Prefer not to say	2.96		
Highest educational qualification		2.35	0.67
GCSE/NVQ	2.82		
A/AS Level/GNVG	2.89		
Bachelor's Degree	3.02		
Master's	2.96		
Doctorate	3.20		
Number of individuals in household[a]	-	20.03	0.02
Presence of children in household[ua]	3.15	16580	0.00
No children in household	2.76		
Housing situation		5.25	0.39
Home owned outright	2.82		
Home owned with mortgage or loan	2.96		
Shared ownership	3.60		
Let from council	2.87		
Let from private landlord or letting agency	2.88		
Other	3.28		
Water meter status		0.50	0.80
On a water meter	2.95		
Unmetered	2.90		
Has its own water supply	3.11		
Differences in water company+	-	21.98	0.40
Occupation		6.19	0.29
Higher managerial, administrative or professional	3.08		
Intermediate managerial, administrative or professional	2.74		
Supervisory or clerical and junior managerial, administrative or professional	2.84		
	2.91		
Skilled manual worker	3.19		
Semi and unskilled manual worker	3.10		
Casual or non-worker			

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Calculated with life expectancy of 85.65 (UK Office for National Statistics, 2015)

+ Excluded individuals that stated 'do not know' or 'prefer not to say' during Kruskal-Wallis H test

Source: Author.

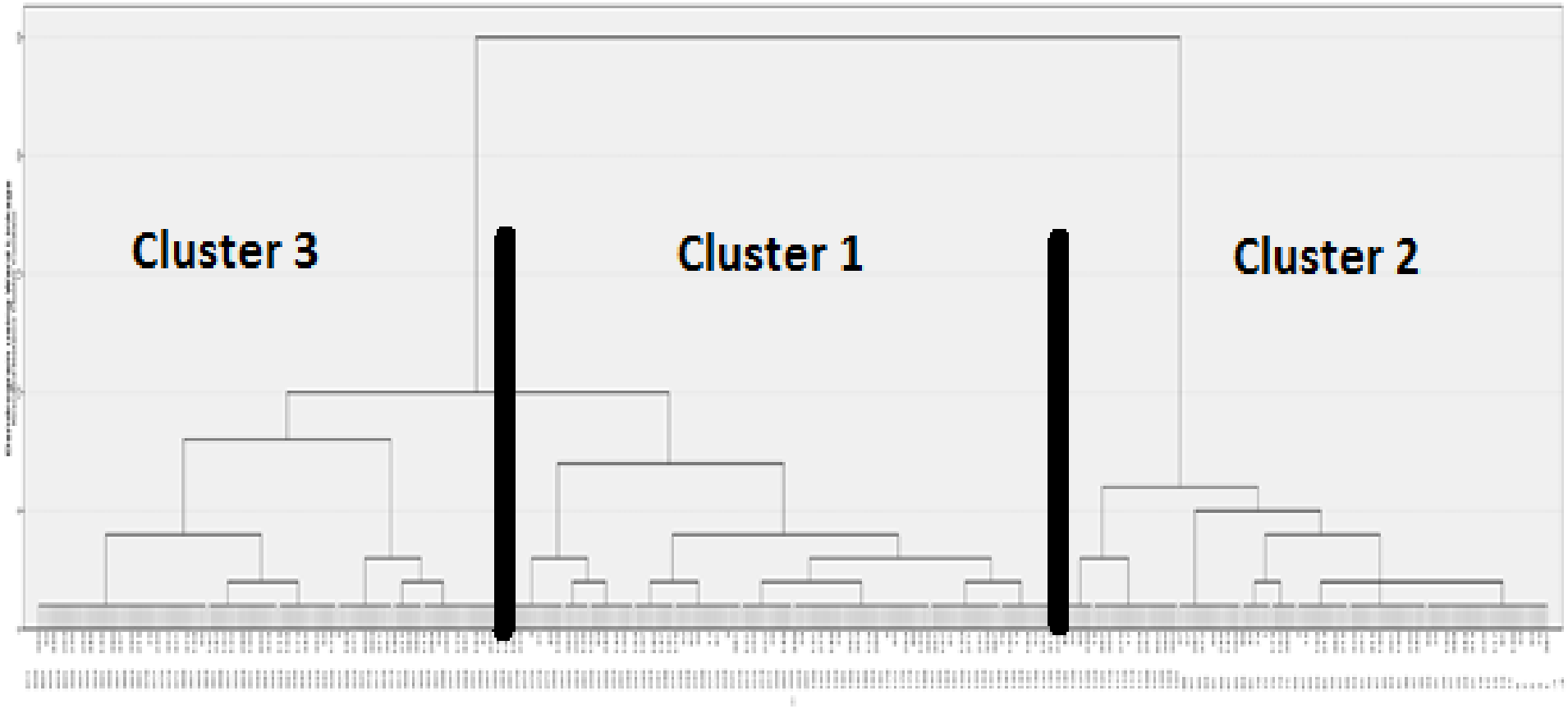
Characteristics	$\bar{x}$	χ^2	P
Type of accommodation		6.69	0.08
Hotel	3.01		
B&B	3.06		
Self-catering	2.56		
Campsite/ Caravan Park	2.83		
Motivation for travel[bu]			
To visit friends and relatives	3.00	16022	0.43
Holiday	2.92	15485	0.75
Business or for work	2.90	5371	0.84
Nights stayed in tourism accommodation per year for:			
Holiday		3.71	0.45
0-5	3.04		
5-10	2.75		
10-15	3.00		
15-20	2.96		
Over 20	2.85		
Business/work[a]		12.54	0.01
0-5	2.83		
5-10	3.33		
10-15	3.45		
15-20	3.17		
Over 20	3.67		

[a] Indicates a statistically significant difference between clusters using a Kruskal-Wallis H test or Mann-Whitney U test ($p<0.05$)

[b] Question allowing multiple responses (e.g. tick all that apply)

Source: Author.

Appendix 20: Dendrogram Using Hierarchal Cluster Analysis and Ward's Method with Euclidean Squared as the Measurement of Distance for Five Tourism Water Behaviours.



Source: Author.